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CORRES. CONTROL
INCOMING LTR NO.

00995 RF03

DUE DATE
ACTION

CORRESPONDENCE CONTROL

Department of Energy
ROCKY FLATS FIELD OFFICE
10808 HIGHWAY 93, UNIT A
GOLDEN, COLORADO 80403-8200

03-DOE-01098

OCT 23 2003

DIST.	LTR	ENC
BERARDINI, J. H.	X	
BOGNAR, E. S.	X	
BROOKS, L.	X	
BUTLER, L.	X	
CROCKETT, G. A.		
DECK, C. A.	X	
DEGENHART, K. R.	X	
DIETER, T. J.		
DIETERLE, S. E.		
FERRERA, D. W.	X	
GIACOMINI, J. J.		
HIETT, S. B.	X	
ISOM, J. H.		
LINDSAY, D. C.	X	
LONG, J. W.		
LYLE, J. L.		
MARTINEZ, L. A.	X	
NAGEL, R. E.	X	
NORTH, K.	X	
PARKER, A. M.	X	
RODGERS, A. D.		
SHELTON, D. C.	X	
SPEARS, M. S.		
TRICE, K. D.		
TUOR, N. R.	X	
WILLIAMS, J. L.		
ZAHM, C.	X	

COR. CONTROL	X	
ADMN. RECORD		
PATS/130		

Reviewed for Addressee
Corres. Control RFP

10/27/03 LC
Date By

Ref. Ltr. #

DOE ORDER #
5400.1

Mr. Steven H. Gunderson
Rocky Flats Cleanup Agreement Project Coordinator
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Mr. Timothy Rehder
Rocky Flats Cleanup Project Manager
United States Environmental Protection Agency
999 18th Street, Suite 500
Denver, Colorado 80202-2466

Dear Mr. Gunderson and Mr. Rehder:

Enclosed is the Rocky Flats Cleanup Agreement (RFCA) Implementation Quarterly Status Report for the Third Quarter for Fiscal Year 2003.

The RFCA Parties have agreed to modify certain RFCA attachments to reflect progress made or changed conditions at the Rocky Flats Environmental Technology Site (Site) since these attachments were originally issued or make changes to conform to modified Attachments 5 and 10. The following RFCA Attachments contain agreed to modifications and are attached to the Status Report for your review and approval:

Attachment 1: Operable Unit Consolidation Plan,
Attachment 2: Site Map; and
Attachment 3: Individual Hazardous Substance Sites
Attachment 4: Environmental Restoration Ranking;
Attachment 7: List of Repositories, and
Attachment 11: List of Addresses

If you have any questions or comments, please contact me at (303) 966-2282 or Richard Schassburger at (303) 966-4888.

Sincerely,

Joseph A. Legare
Assistant Manager
for Environment and Stewardship

Enclosure

cc w/o Encl.:
F. Lockhart, OOM, RFFO
R. Schassburger, HR, RFFO
D. Shelton, K-H
L. Brooks, K-H

DOCUMENT CLASSIFICATION REVIEW WAIVER PER CLASSIFICATION OFFICE

ADMIN RECORD

IA-A-001755

ATTACHMENT 3

RFETS INDIVIDUAL HAZARDOUS SUBSTANCE SITE (IHSS) LIST

Cross Reference List of IHSSs/PACs

IHSS	OU	Old OU	PAC	Description
101*	IA	4	000-101	207 Solar Evaporation Ponds
102	1	1	800-102	Oil Sludge Pit
103	1	1	800-103	Chemical Burial
104	1	1	800-104	Liquid Dumping
105.1	1	1	800-105.1	Bldg. 881 Westernmost Out of Service Fuel Tanks .
105.2	1	1	800-105.2	Bldg. 881 Easternmost Out of Service Fuel Tanks
106	1	1	800-106	Bldg. 881, Outfall
107	1	1	800-107	Bldg. 881, Hillside Oil Leak
108	BZ	2	900-108	Trench T-1
109	BZ	2	900-109	Trench T-2 - Ryan's Pit
110	BZ	2	NE-110	Trench T-3
111.1	BZ	2	NE-111.1	Trench T-4
111.2	BZ	2	NE-111.2	Trench T-5
111.3	BZ	2	NE-111.3	Trench T-6
111.4	BZ	2	NE-111.4	Trench T-7
111.5	BZ	2	NE-111.5	Trench T-8
111.6	BZ	2	NE-111.6	Trench T-9
111.7	BZ	2	NE-111.7	Trench T-10
111.8	BZ	2	NE-111.8	Trench T-11
112	BZ	2	900-112	903 Pad (IAG Name: 903 Drum Storage Area)
113	BZ	2	900-113	Mound Area
114*	BZ	7	NW-114	Present Landfill
115	IA	5	SW-115	Original Landfill
116.1	IA	12	400-116.1	West Loading Dock, Building 447 (IAG Name: West Loading Dock Area)
116.2	IA	12	400-116.2	South Loading Dock, Building 444 (IAG Name: South Loading Dock Area)
117.1	IA	13	500-117.1	North Site Chemical Storage
117.2	IA	13	500-117.2	Middle Site Chemical Storage
117.3	IA	13	600-117.3	Chemical Storage – South Site
118.1	IA	8	700-118.1	Multiple Solvent Spills West of Building 730
118.2	IA	8	700-118.2	Multiple Solvent Spills South End of Building 776
119.1	1	1	900-119.1	West Scrap Metal Storage Area and Solvent Spill
119.2	1	1	900-119.2	East Scrap Metal Storage Area and Solvent Spill
120.1	IA	12	600-120.1	Fiberglassing Area North of Building 664
120.2	IA	12	600-120.2	Fiberglassing Area West of Building 664
121	IA	9	000-121	Original Process Waste Lines (includes Tanks T-2, T-3, T-10, T-14, T-16, T-40)
122	IA	9	400-122	Underground Concrete Tank
123.1	IA	8	700-123.1	Valve Vault 7
123.2	IA	9	700-123.2	Valve Vault West of Building 707
124.1	IA	9	700-124.1	30,000 Gallon Tank (Tank #68)
124.2	IA	9	700-124.2	14,000 Gallon Tank (Tank #66)
124.3	IA	9	700-124.3	14,000 Gallon Tank (Tank #67)
125	IA	9	700-125	Holding Tank (Tank #66) (This is the same tank identified in IHSS 124.2)
126.1	IA	9	700-126.1	Westernmost Out-of-Service Waste Tank
126.2	IA	9	700-126.2	Easternmost Out-of-Service Waste Tank
127	IA	9	700-127	Low-Level Radioactive Waste Leak

Cross Reference List of IHSSs/PACs

128	IA	13	300-128	Oil Burn Pit No. 1
129	IA	10	400-129	Building 443 Oil Leak
130	1	1	900-130	Contaminated Soil Disposal Area East of Bldg. 881
131	IA	14	700-131	Radioactive Site - 700 Area Site #1
132	IA	9	700-132	Radioactive Site - 700 Area Site #4
133.1	BZ	5	SW-133.1	Ash Pit 1
133.2	BZ	5	SW-133.2	Ash Pit 2
133.3	BZ	5	SW-133.3	Ash Pit 3
133.4	BZ	5	SW-133.4	Ash Pit 4
133.5	BZ	5	SW-133.5	Incinerator Facility
133.6	BZ	5	SW-133.6	Concrete Wash Pad
134N	IA	13	300-134N	Lithium Metal Destruction Site
134S	IA	13	300-134S	Lithium Metal Destruction Site
135	IA	8	300-135	Cooling Tower Blowdown
136.1	IA	12	400-136.1	Cooling Tower Pond West of Building 444 (IAG Name: Cooling Tower Pond Northeast Corner of Building 460)
136.2	IA	12	400-136.2	Cooling Tower Pond East of Building 444 (IAG Name: Cooling Tower Pond West of Building 460)
137	IA	8	700-137	Cooling Tower Blowdown Buildings 712 and 713 (IAG Name: Cooling Tower Blowdown Building 774)
138	IA	8	700-138	Cooling Tower Blowdown Building 779
139.1N(a)	IA	8	700-139.1N(a)	Caustic/Acid Spills Hydroxide Tank Area
139.1N(b)	IA	8	700-139.1N(b)	Caustic/Acid Spills Hydroxide Tank Area
139.1S	IA	8	700-139.1S	Caustic/Acid Spills Hydroxide Tank Area
139.2	IA	8	700-139.2	Caustic/Acid Spills Hydrofluoric Acid Tanks
140	BZ	2	900-140	Hazardous Disposal Area (IAG Name: Reactive Metal Destruction Site)
141	BZ	6	900-141	Sludge Disposal
142.1	BZ	6	NE-142.1	Pond A-1
142.2	BZ	6	NE-142.2	Pond A-2
142.3	BZ	6	NE-142.3	Pond A-3
142.4	BZ	6	NE-142.4	Pond A-4
142.5	BZ	6	NE-142.5	Pond B-1
142.6	BZ	6	NE-142.6	Pond B-2
142.7	BZ	6	NE-142.7	Pond B-3
142.8	BZ	6	NE-142.8	Pond B-4
142.9	BZ	6	NE-142.9	Pond B-5
142.10	BZ	5	SE-142.10	Pond C-1
142.11	BZ	5	SE-142.11	Pond C-2
142.12	BZ	6	NE-142.12	Flume Pond (IAG Name: Newly Identified Pond A-5)
143	IA	6	700-143	Bldg. 771 Outfall
144N	IA	8	700-144(N)	Sewer Line Overflow (IAG Name: Sewer Line Break)
144S	IA	8	700-144(S)	Sewer Line Overflow (IAG Name: Sewer Line Break)
145	1	1	800-145	Sanitary Waste Line Leak
146.1¤	IA	9	700-146.1	Concrete Process Waste Tanks 7,500 Gallon Tank (31)
146.2¤	IA	9	700-146.2	Concrete Process Waste Tanks 7,500 Gallon Tank (32)

Cross Reference List of IHSSs/PACs

146.3¤	IA	9	700-146.3	Concrete Process Waste Tanks 7,500 Gallon Tank (34W)
146.4¤	IA	9	700-146.4	Concrete Process Waste Tanks 7,500 Gallon Tank (34E)
146.5¤	IA	9	700-146.5	Concrete Process Waste Tanks 3,750 Gallon Tank (30)
146.6¤	IA	9	700-146.6	Concrete Process Waste Tanks 3,750 Gallon Tank (33)
147.1	IA	9	700-147.1	Process Waste Line Leaks (IAG Name: Maas Area)
147.2	IA	12	800-147.2	Bldg. Conversion Activity Contamination Area
148	IA	13	100-148	Waste Spills
149.1	IA	9	700-149.1	Effluent Pipe
149.2	IA	9	700-149.2	Effluent Pipe
150.1	IA	8	700-150.1	Radioactive Site North of Building 771 (IAG Name: Radioactive Leak North of Building 771)
150.2	IA	8	700-150.2	Radioactive Site West of Buildings 771 and 776 (IAG Name: Radioactive Leak West of Building 771)
150.3	IA	8	700-150.3	Radioactive Site Between Buildings 771 & 774 (IAG Name: Radioactive Leak Between Buildings 771 & 774)
150.4	IA	8	700-150.4	Radioactive Site Northwest of Building 750 (IAG Name: Radioactive Leak East of Building 750)
150.5	IA	8	700-150.5	Radioactive Site West of Building 707 (IAG Name: Radioactive Leak West of Building 707) (This is a duplicate of IHSS 123.2.)
150.6	IA	8	700-150.6	Radioactive Site South of Building 779 (IAG Name: Radioactive Leak South of Building 779)
150.7	IA	8	700-150.7	Radioactive Site South of Building 776 (IAG Name: Radioactive Leak South of Building 776)
150.8	IA	8	700-150.8	Radioactive Site Northeast of Building 779 (IAG Name: Radioactive Leak Northeast of Building 779)
151	IA	8	300-151	Tank 262 Fuel Oil Spills
152	IA	13	600-152	Fuel Oil Tank 221 Spills
153	BZ	2	900-153	Oil Burn Pit No. 2
154	BZ	2	900-154	Pallet Burn Site
155	BZ	2	900-155	903 Lip Area
156.1	IA	14	300-156.1	Building 371 Parking Lot
156.2	BZ	6	NE-156.2	Soil Dump Area Between the A and B Series Drainages
157.1	IA	13	400-157.1	Radioactive Site North Area
157.2	IA	12	400-157.2	Radioactive Site South Area
158	IA	13	500-158	Radioactive Site – Building 551
159	IA	9	500-159	Radioactive Site – Building 559
160	IA	14	600-160	Radioactive Site Building 444 Parking Lot
161	IA	14	600-161	Radioactive Site - Building 664
162	IA	14	000-162	Radioactive Site - 700 Area Site # 2
163.1	IA	8	700-163.1	Radioactive Site 700 Area Site No.3 Wash Area
163.2	IA	8	700-163.2	Radioactive Site 700 Area Site No.3 Buried Slab
164.1	IA	14	600-164.1	Radioactive Slab from Bldg. 771
164.2	IA	14	800-164.2	Radioactive Site 800 Area Site #2, Building 886 Spills
164.3	IA	14	800-164.3	Radioactive Site 800 Area Site #2, Building 889 Storage Pad
165	IA	6	900-165	Triangle Area
166.1	BZ	6	NE-166.1	Trench A
166.2	BZ	6	NE-166.2	Trench B

Cross Reference List of IHSSs/PACs

166.3	BZ	6	NE-166.3	Trench C
167.1	BZ	6	NE-167.1	Landfill North Area Spray Field
167.2	BZ	6	NE-167.2	Pond Area Spray Field (Center Area)
167.3	BZ	6	NE-167.3	South Area Spray Field
168*	11	11	000-168	West Spray Field
169	IA	13	500-169	Waste Drum Peroxide Burial
170	BZ	10	NW-170	PU&D Storage Yard - Waste Spills
171	IA	13	300-171	Solvent Burning Ground
172	IA	8	000-172	Central Avenue Waste Spill
173	IA	8	900-173	South Dock - Building 991 (IAG Name: Radioactive Site - 900 Area)
174A*	BZ	10	NW-174A	PU&D Yard Container Storage Area
174B*	BZ	10	NW-174B	PU&D Container Storage Facilities
175	IA	10	900-175	S&W Building 980 Container Storage Facility
176	IA	10	900-176	S&W Contractor Storage Yard
177	IA	10	800-177	Building 885 Drum Storage and Paint Storage (IAG Name: Building 885 Drum Storage Area)
178	15	15	800-178	Building 881 Drum Storage Area
179	15	15	800-179	Building 865 Drum Storage; refer to OU 15 CAD/ROD)
180	15	15	800-180	Building 883 Drum Storage; refer to OU 15 CAD/ROD)
181	IA	10	300-181	Building 334 Cargo Container Area
182	IA	10	400-182	Building 444/453 Drum Storage Area
183	BZ	2	900-183	Gas Detoxification Area
184	IA	8	900-184	Building 991 Steam Cleaning Area
185	16	16	700-185	Solvent Spill
186	IA	13	300-186	Valve Vault 12
187	IA'	12	400-187	Sulfuric Acid Spill (IAG Name: Acid Leaks [2]
188	IA	8	300-188	Acid Leak
189	IA	12	600-189	Nitric Acid Tanks
190	IA	13	000-190	Caustic Leak (also referred to as Central Avenue Ditch)
191	IA	13	400-191	Hydrogen Peroxide Spill
192	16	16	000-192	Antifreeze Discharge
193	16	16	400-193	Steam Condensate Leak
194	16	16	700-194	Steam Condensate Leak
195	16	16	NW-195	Nickel Carbonyl Disposal
196	IA	5 and 16	SW-196	Water Treatment Plant Backwash Pond
197	16	16	500-197	Scrap Metal Sites
199	3	3	OFF-SITE AREA 1	Off-Site Area 1
200	3	3	OFF-SITE AREA 2	Great Western Reservoir
201	3	3	OFF-SITE AREA 3	Standley Lake
202	3	3	OFF-SITE AREA 4	Mower Reservoir
203	BZ	7	NW-203	Inactive Hazardous Waste Storage Area
204	15	15	400-204	Original Uranium Chip Roaster
205	IA	10	400-205	Building 460 Sump #3 Acid Side

Cross Reference List of IHSSs/PACs

206	IA	10	300-206	Inactive D-836 Hazardous Waste Tank
207	IA	10	400-207	Inactive 444 Acid Dumpster
208	IA	10	400-208	Inactive 444/447 Waste Storage Area
209	BZ	5	SE-209	Surface Disturbance Southeast of Bldg. 881
210	IA	10	900-210	Building 980 Cargo Container, Unit 16
211	15	15	800-211	Building 881 Drum Storage, Unit 26
212	15	15	300-212	Building 371 Drum Storage Area, Unit 63
213	IA	10	900-213	Unit 15, 904 Pad Pondcrete Storage
214	IA	10	700-214	750 Pad Pondcrete & Saltcrete Storage, Unit 25
215	IA	9	700-215	Process Waste Tank T-40, Unit 55.13
216.1	BZ	6	NE-216.1	East Spray Fields - North Area
216.2	BZ	2	NE-216.2	East Spray Field
216.3	BZ	2	NE-216.3	East Spray Field
217	15	15	800-217	Building 881, CN- Bench Scale Treatment, Unit 32
NA	IA	NA	000-500	Sanitary Sewer System
NA	BZ	NA	000-501	Roadway Spraying
NA	IA	NA	000-502	ITS Water Spill (identified in Quarterly 2 as 000-502; reassigned as 900-1310 in Quarterly 7; the number 000-502 is no longer in use.)
NA	IA	NA	000-503	Solar Pond Water Spill Along Central Avenue
NA	IA	NA	000-504	New Process Waste Lines
NA	IA	NA	000-505	Storm Drains
NA	IA	NA	100-600	Mercury Spill-Valve Vault 124-B, Building 124
NA	IA	NA	100-601	Building 123 Phosphoric Acid Spill
NA	IA	NA	100-602	Building 123 Process Waste Line Break
NA	IA	NA	100-603	Building 123 Bioassay Waste Spill
NA	BZ	NA	100-604	T130 Complex Sewer Line Leaks
NA	IA	NA	100-605	Building 115 Hydraulic Oil Spill
NA	IA	NA	100-606	Building 125 TCE Spill
NA	IA	NA	100-607	Building 111 Transformer PCB Leak
NA	IA	NA	100-608	Building 131 Transformer Leak
NA	IA	NA	100-609	Building 121 Security Incinerator
NA	IA	NA	100-610	Asbestos Release – Building 123
NA	IA	NA	100-611	Building 123 Scrubber Solution Spill
NA	IA	NA	100-612	Battery Solution Spill - Building 119
NA	BZ	NA	100-613	Asphalt Surface in Lay-down Yard North of Building 130 (identified as 000-501 in Quarterly 4; reassigned as 100-613 in Quarterly 7).
NA	IA	NA	300-700	Scrap Roofing Disposal
NA	IA	NA	300-701	Sulfuric Acid Spill – Building 371
NA	IA	NA	300-702	Pesticide Shed
NA	IA	NA	300-703	Building 331 North Area
NA	IA	NA	300-704	Roof Fire, Building 381
NA	IA	NA	300-705	Potassium Hydroxide Spill North of Building 374
NA	IA	NA	300-706	Evaporator Tanks North of Building 374
NA	IA	NA	300-707	Sanitizer Spill
NA	IA	NA	300-708	Transformers North of Building 371
NA	IA	NA	300-709	Transformer Leak 334-1
NA	IA	NA	300-710	Gasoline Spill North of Building 331

Cross Reference List of IHSSs/PACs

NA	IA	NA	300-711	Nickel-Cadmium Battery Acid Spill Outside of Building 373
NA	IA	NA	300-712	0.5-Gallon Antifreeze Spilled by Street Sweeper Outside of Building 373
NA	IA	NA	300-713	Caustic Spill North of Building 331
NA	IA	NA	300-714	Laundry Waste Water Spill from Tank T-803, North of Building 374
NA	IA	NA	300-715	Battery Acid Spill
NA	IA	NA	400-800	Transformer 443-1
NA	IA	NA	400-801	Transformer, Roof of Building 447
NA	IA	NA	400-802	Storage Area, South of Building 334
NA	IA	NA	400-803	Miscellaneous Dumping, Building 460 Storm Drain
NA	IA	NA	400-804	Road North of Building 460
NA	IA	NA	400-805	Building 443 Tank #9 Leak
NA	IA	NA	400-806	Catalyst Spill, Building 440
NA	IA	NA	400-807	Sandblasting Area
NA	IA	NA	400-808	Vacuum Pump Leak - Building 442
NA	IA	NA	400-809	Oil Leak - 446 Guard Post
NA	IA	NA	400-810	Beryllium Fire - Building 444
NA	IA	NA	400-811	Transformer 443-2, Building 443
NA	IA	NA	400-812	Tank T-2 Spill in Building 460
NA	IA	NA	400-813	RCRA Tank Leak in Building 460
NA	IA	NA	400-814	Air Conditioner Compressor Release, Bldg. 444 Roof
NA	IA	NA	400-815	RCRA Tank Leak in Building 460
NA	IA	NA	400-820	Central Avenue Ditch Soil Spreading (identified in Quarterly 6 as 400-820, reassigned as 600-1004 in Quarterly 7; the number 400-820 is no longer in use).
NA	IA	N/A	500-900	Transformer Leak – 515/516
NA	IA	N/A	500-901	Transformer Leak – 555
NA	IA	N/A	500-902	Transformer Leak – 559
NA	IA	NA	500-903	RCRA Storage Unit #1
NA	IA	NA	500-904	Transformer Leak – 223-1/223-2
NA	IA	NA	500-905	Transformer Leak – 558-1
NA	IA	NA	500-906	Asphalt Surface Near Building 559
NA	IA	NA	500-907	Tanker Truck Release of Hazardous Waste from Tank 231B
NA	IA	NA	500-908	Oil Released from Air Compressor
NA	IA	NA	500-909	Release of Spent Photographic Fixer Solution
NA	IA	NA	600-1000	Transformer Storage Building 662
NA	IA	NA	600-1001	Temporary Waste Storage Building 663
NA	IA	NA	600-1001(a)	Waste Oil Identified in PAC-1001
NA	IA	NA	600-1002	Transformer Storage - West of Building 666
NA	IA	NA	600-1003	Transformers North and South of 661-675 Substation
NA	IA	NA	600-1004	Central Avenue Ditch Cleaning Incident (formerly identified as 400-820)
NA	IA	NA	600-1005	Former Pesticide Storage Area
NA	IA	NA	700-1100	French Drain North of Building 776/777
NA	IA	NA	700-1101	Laundry Tank Overflow - Building 732
NA	IA	NA	700-1102	Transformer Leak – 776-4
NA	IA	NA	700-1103	Leaking Transformers - Building 707
NA	IA	NA	700-1104	Leaking Transformers - Building 708
NA	IA	NA	700-1105	Transformer Leak - 779-1/779-2

Cross Reference List of IHSSs/PACs

NA	IA	NA	700-1106	Process Waste Spill - Portal 1
NA	IA	NA	700-1107	Compressor Waste Oil Spill - Building 776
NA	IA	NA	700-1108	771/774 Footing Drain Pond
NA	IA	NA	700-1109	Uranium Incident - Building 778
NA	IA	NA	700-1110	Nickel Carbonyl Burial West of Building 771
NA	IA	NA	700-1111	Leaking Transformer - Building 750
NA	IA	NA	700-1112	Leaking Transformer - 776-5
NA	IA	NA	700-1113	Water Released from 207C Solar Evaporation Pond
NA	IA	NA	700-1114a	Release During Liquid Transfer Operations from Bldg. 774
NA	IA	NA	700-1114b	Release During Liquid Transfer Operations from Bldg. 774
NA	IA	NA	700-1115	Identification of Diesel Fuel in Subsurface Soils
NA	IA	NA	700-1116	Leaking Transformer South of Building 776
NA	IA	NA	700-1117	Building 701 Water Line, Soil Put-back
NA	IA	NA	800-1200	Valve Vault 2
NA	IA	NA	800-1201	Radioactive Site South of Building 883
NA	IA	NA	800-1202	Sulfuric Acid Spill, Building 883
NA	IA	NA	800-1203	Sanitary Sewer Line Break Between Buildings 865 and 886
NA	IA	NA	800-1204	Building 866 Spills
NA	IA	NA	800-1205	Building 881, East Dock
NA	IA	NA	800-1206	Fire, Building 883
NA	IA	NA	800-1207	Transformer 883-4
NA	IA	NA	800-1208	Transformer 881-4
NA	IA	NA	800-1209	Leaking Transformers, 800 Area
NA	IA	NA	800-1210	Transformers 865-1 and 865-2
NA	IA	NA	800-1211	Capacitor Leak, Building 883
NA	IA	NA	800-1212	Building 866 Sump Spill
NA	IA	NA	900-1300	RO Plant Sludge Drying Beds
NA	IA	NA	900-1301	Building 991 Enclosed Area
NA	IA	NA	900-1302	Gasoline Spill
NA	IA	NA	900-1303	Natural Gas Leak
NA	IA	NA	900-1304	Chromic Acid Spill - Building 991
NA	IA	NA	900-1305	Building 991 Roof
NA	IA	NA	900-1306	Transformers 991-1 and 991-2
NA	IA	NA	900-1307	Explosive Bonding Pit
NA	IA	NA	900-1308	Gasoline Spill Outside of Building 980
NA	BZ	NA	900-1309	OU 2 Field Treatability Unit Spill
NA	IA	NA	900-1310	ITS Water Spill (identified as 000-502 in Quarterly 2; reassigned 900-1310 in Quarterly 7)
NA	IA	NA	900-1311	Septic Tank East of Building 991
NA	IA	NA	900-1312	OU-2 Water Spill
NA	IA	NA	900-1313	Seep Area Near OU-2 Influent
NA	IA	NA	900-1314	Solar Evaporation Pond 207B Sludge Release
NA	IA	NA	900-1315	Tanker Truck Release on East Patrol Road, North of Spruce Ave.
NA	BZ	NA	900-1316	Elevated Chromium (total) Identified During Geotechnical Drilling
NA	IA	NA	900-1317	Soil Released from Wooden Crate in 964 Laydown Yard
NA	IA	NA	900-1318	Release of F001 Listed Waste Water to Soil (identified as 900-1307 in Annual 1997; reassigned 900-1318 in Annual 1998) .

Cross Reference List of IHSSs/PACs

NA	BZ	NA	NE-1400	Tear Gas Powder Release
NA	BZ	NA	NE-1401	NE Buffer Zone Gas Line Break
NA	BZ	NA	NE-1402	East Inner Gate PCB Spill
NA	BZ	NA	NE-1403	Gasoline Spill - Building 920 Guard Post
NA	BZ	NA	NE-1404	Diesel Spill at Pond B-2 Spillway
NA	BZ	NA	NE-1405	Diesel Fuel Spill at Field Treatability Unit (identified as NE-1404; reassigned NE-1405 in Quarterly 7)
NA	BZ	NA	NE-1406	771 Hillside Sludge Release
NA	BZ	NA	NE-1407	OU 2 Treatment Facility
NA	BZ	NA	NE-1408	OU 2 Test Well (formerly NE-1406)
NA	BZ	NA	NE-1409	Modular Tanks and 910 Treatment System Spill (formerly 000-503)
NA	BZ	NA	NE-1410	Diesel Fuel Spill at Field Treatability Unit
NA	BZ	NA	NE-1411	Diesel Fuel Overflowed from Tanker at OU 2 Field Treatability Unit
NA	BZ	NA	NE-1412	Trench T-12 Located in OU 2 East Trenches
NA	BZ	NA	NE-1413	Trench T-13 Located in OU 2 East Trenches
NA	BZ	NA	NW-1500	Diesel Spill at PU&D Yard (formerly NW-175)
NA	BZ	NA	NW-1501	Asbestos Release at PU&D Yard (formerly NW-176)
NA	BZ	7	NW-1502	Improper Disposal of Diesel-Contaminated Material at Landfill (formerly NW-177)
NA	BZ	7	NW-1503	Improper Disposal of Fuel-Contaminated Material at Landfill
NA	BZ	7	NW-1504	Improper Disposal of Thorosilane-Contaminated Material at Landfill
NA	BZ	NA	NW-1505	North Firing Range
NA	BZ	NA	SE-1600	Pond 7-Steam Condensate Releases
NA	BZ	NA	SE-1601	Pond 8 - Cooling Tower Discharge Releases
NA	BZ	NA	SE-1602	East Firing Range
NA	BZ	NA	SW-1700	Fuel Spill into Woman Creek Drainage
NA	BZ	5	SW-1701	Recently Identified Ash Pit
NA	BZ	5	SW-1702	Recently Identified Ash Pit
NA	IA	NA	UBC-122	Building 122 (UBC-122)
NA	IA	NA	UBC-123	Building 123 (UBC-123)
NA	IA	NA	UBC-125	Building 125 (UBC-125)
NA	IA	NA	UBC-331	Building 331 (UBC-331)
NA	IA	NA	UBC-371	Building 371 (UBC-371)
NA	IA	NA	UBC-374	Building 374 (UBC-374)
NA	IA	NA	UBC-439	Building 439 (UBC-439)
NA	IA	NA	UBC-440	Building 440 (UBC-440)
NA	IA	NA	UBC-441	Building 441 UBC-441)
NA	IA	NA	UBC-442	Building 442 (UBC-442)
NA	IA	NA	UBC-444	Building 444 (UBC-444)
NA	IA	NA	UBC-447	Building 447 (UBC-447)
NA	IA	NA	UBC-528	Building 528 (UBC-528)
NA	IA	NA	UBC-559	Building 559 (UBC-559)
NA	IA	NA	UBC-701	Building 701 (UBC-701)
NA	IA	NA	UBC-707	Building 707 (UBC-707)
NA	IA	NA	UBC-731	Building 731 (UBC-731)
NA	IA	NA	UBC-770	Building 770 UBC-770)
NA	IA	NA	UBC-771	Building 771(UBC-771)

Cross Reference List of IHSSs/PACs

NA	IA	NA	UBC-774	Building 774 (UBC-774)
NA	IA	NA	UBC-776	Building 776 (UBC-776)
NA	IA	NA	UBC-777	Building 777 (UBC-777)
NA	IA	NA	UBC-778	Building 778 (UBC-778)
NA	IA	NA	UBC-779	Building 779 (UBC-779)
NA	IA	NA	UBC-865	Building 865 (UBC-865)
NA	IA	NA	UBC-881	Building 881 (UBC-881)
NA	IA	NA	UBC-883	Building 883 (UBC-883)
NA	IA	NA	UBC-886	Building 886 (UBC-886)
NA	IA	NA	UBC-887	Building 887 (UBC-887)
NA	IA	NA	UBC-889	Building 889 (UBC-889)
NA	IA	NA	UBC-991	Building 991 (UBC-991)

Notes:

1. NA - Not Applicable
2. IHSS 198 was deleted in 1990.
3. PAC 000-502 was renamed PAC 900-1310. Therefore, PAC 000-502 is no longer used.
4. PAC 400-820 was renamed PAC 600-1104. Therefore, PAC 400-820 is no longer used.
5. * Denotes IHSSs that are RCRA units per the Historical Release Report (See RFCA Attachment 12 for reference.)

ATTACHMENT 4

ENVIRONMENTAL RESTORATION RANKING

ENVIRONMENTAL RESTORATION RANKING

A prioritized list of Environmental Restoration (ER) locations was originally developed to select the top priority locations for remediation. Effective with the March 21, 2000 update to RFCA, the ER Ranking was determined by the RFCA Parties to no longer be the sole source for identifying the remedial action sequence. Instead, the Parties recognized that future remedial actions should be based on opportunity and decontamination and decommissioning (D&D) schedules. The preparation and annual updating of an ER Ranking list was appropriate in the early years of conducting accelerated actions at Rocky Flats when the site closure baseline was under development. However, there is now a detailed baseline and schedule for closing the entire site that addresses the sequencing of D&D and ER projects, and therefore, the RFCA Project Coordinators believe that subsequent revisions are unlikely. The ER Ranking was most recently updated in September 2001. That version is included in this updated attachment. The RFCA Parties have determined that this will be the last update.

TYPE	Area	ID	Description	Status	Rank1	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	ALF Score	SW Impact Score Multiplier	Potential for Further Release Multiplier	Professional Judgement Multiplier	Total Priority Score	Exceeds Tier I AL
IHSS	900	112	903 Pad		1		41426	6764	655	48845	10	2	2	1	40	yes
IHSS	900	155	903 Lip Area		2		41426	6764	655	48845	10	2	2	1	40	yes
IHSS	700	118.1	Solvent Spills W B730		3	1194	1194	2325	2	4715	8	1.5	2	1	24	yes
IHSS	000	101	Solar Ponds		4		2403	312	435	3150	7	2	1	1	14	yes
IHSS	000	121	OPWL		5		1013	n	n	1013	7	1	1	2	14	yes
TNK	000	T29	Tank 29 - OPWL		6	15	<1	<1	4110	4125	7	1	2	1	14	yes
PLM		CTPLM	Carbon Tet Plume		7		50000000	n	n	50000000	10	1	1	1	10	yes
PLM		RPPLM	903 Pad/Ryan's Pit Plume		8		73365			73365	10	1	1	1	10	yes
IHSS	900	165	Triangle Area		9		215	17	188	420	5	2	1	1	10	yes
IHSS	300	171	Fire Training		10		134	n	<1	134	4	1	2	1	8	no
PLM		881PLM	881 Hillside Plume		11		9167	n	n	9167	8	1	1	1	8	yes
IHSS	NE	111.4	Trench T-7		12		<1	128	<1	128	4	1	1	2	8	yes
PLM		IAPLM	Industrial Area Plume		13		2615	n	n	2615	7	1	1	1	7	yes
IHSS	500	117.2	M. Chem. Storage Site		14		651		2	653	6	1	1	1	6	yes
IHSS	700	131	Rad Site 700 Area No.1		15		n		119	119	3	1	2	1	6	no
IHSS	600	160	Rad Site B444 Parking Lot		16		578	6	101	685	6	1	1	1	6	yes

TYPE	Area	ID	Description	Status	Rank1	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	ALF Score	SW Impact Score Multiplier	Potential for Further Release Multiplier	Professional Judgement Multiplier	Total Priority Score	Exceeds Tier I AL
IHSS	600	161	Rad Site W of B664		17		n	5	98	103	3	1	1	2	6	no
PLM		PUDPLM	PU&D Yard Plume		18		553	n	n	553	6	1	1	1	6	no
IHSS	SW	115	Original Landfill		19		172	258	242	672	6	1	1	1	6	no
IHSS	NW	114	Present Landfill		20		415	<1	31	446	5	2	1	0.5	5	no
IHSS	700	143	Old Outfall -B771		21		46	115	92	252	5	1	1	1	5	no
IHSS	700	150.2	Rad Site W B 771/776		22		n	2	374	376	5	1	1	1	5	no
IHSS	500	158	Rad Site B551		23		418	n	3	421	5	1	1	1	5	no
UBC	800	B881	B881 UBC		24		257	7	n	264	5	1	1	1	5	yes
PLM		881APLM	B881 Area Plume		25		257			257	5	1	1	1	5	no
PLM		PLFPLM	Present Landfill Plume		26		415	n	n	415	5	2	1	0.5	5	no
IHSS	700	150.8	Rad Site S B779		27		n	n	435	435	5	1	1	1	5	no
IHSS	100	196	Backwash Pond (Listed as OU-5 on Map)		28		44	258	6	308	5	1	1	1	5	no
IHSS	400	B444	B444 UBC		29		156	n	<1	156	4	1	1	1	4	no
IHSS	700	B707	B707 UBC		30		142	n	<1	142	4	1	1	1	4	no
IHSS	500	117.1	N. Chem. Storage Site		31		n	n	29	29	2	1	1	2	4	no
IHSS	500	197	Scrap Metal Stor.		32		n	n	29	29	2	1	1	2	4	no
IHSS	700	B779	B779 UBC		33		n	n	64	64	2	1	1	2	4	no

TYPE	Area	ID	Description	Status	Rank1	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	ALF Score	SW Impact Score Multiplier	Potential for Further Release Multiplier	Professional Judgement Multiplier	Total Priority Score	Exceeds Tier I AL
IHSS	NE	111.8	Trench T-11		34		96	<1	<1	96	3	1	1	1	3	no
IHSS	600	120.2	Fiberglass Area W B664		35		n	4	98	102	3	1	1	1	3	no
IHSS	700	138	B779 Cooling Tower BD		36		n	n	97	97	3	1	1	1	3	no
IHSS	700	144 (N)	Sewer Line Overflow		37		n	94	8	102	3	1	1	1	3	no
IHSS	400	157.1	Rad Site N		38		5	n	100	105	3	1	1	1	3	no
IHSS	400	157.2	Rad Site S		39		2	2	113	117	3	1	1	1	3	no
IHSS	800	164.2	Rad Site #2 800 Area, Bldg 886 Spill		40		<1	<1	99	99	3	1	1	1	3	no
IHSS	900	176	S&W Contractor Yard		41		n	n	102	102	3	1	1	1	3	no
IHSS	700	150.1	Rad Site N B771		42		n	n	114	114	3	1	1	1	3	no
IHSS	000	162	Rad Site 700 Area		43		n	5	374	379	5	1	1	0.5	2.5	no
PLM		OLPLM	Old Landfill Plume		44		174	n	n	174	4	1	1	0.5	2	no
UBC	700	137	B.712/713 Cooling Tower BD.		45		n	n	62	62	2	1	1	1	2	no
TNK	800	T27	Tank 27 - OPWL		46		n	n	59	59	2	1	1	1	2	no
UBC	100	B123	B123 UBC		47		9	7	1	17	1	1	1	1	1	yes
IHSS	900	119.1	Solvent Spill Site OU1		48		<1	29	3	32	2	1	1	0.5	1	no
IHSS	600	120.1	Fiberglass Area N B664		49		n	n	20	20	1	1	1	1	1	no
IHSS	400	136.1	Cooling Tower Pond W of B444		50		n	n	1	1	1	1	1	1	1	no

TYPE	Area	ID	Description	Status	Rank1	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	ALF Score	SW Impact Score Multiplier	Potential for Further Release Multiplier	Professional Judgement Multiplier	Total Priority Score	Exceeds Tier I AL
IHSS	400	136.2	Cooling Tower Pond E. B444		51		n	n	4	4	1	1	1	1	1	no
IHSS	100	148	Waste Leaks		52		9	4	3	16	1	1	1	1	1	no
IHSS	700	150.3	Rad Site B 771/774		53		n	n	16	16	1	1	1	1	1	no
IHSS	700	163.1	Rad Site 700 North B774		54		n	n	2	2	1	1	1	1	1	no
IHSS	900	175	S&W B980 Cont. Storage		55		n	n	5	5	1	1	1	1	1	no
IHSS	800	177	B885 Drum Storage		56		<1	n	5	5	1	1	1	1	1	no
IHSS	400	187	Sulphuric Acid Spill B443		57		n	n	5	5	1	1	1	1	1	no
IHSS	000	190	Caustic Leak		58		12	n	4	16	1	1	1	1	1	no
IHSS	700	214	750 Pad-Pondcrete/Saltcrete Stor.		59		n	n	13	13	1	1	1	1	1	no
PAC	400	400-801	Transformer, Roof of Building 447		60		0	n	26	26	2	1	1	0.5	1	no
PAC	700	700-1108	Bowman's Pond		61		n	n	37	37	2	1	1	0.5	1	no
UBC	400	B440	B440 UBC		62		n	6	n	6	1	1	1	1	1	no
IHSS	700	149.1	Effluent Line		63		n	n	11	11	1	1	1	1	1	no
IHSS	700	149.2	Effluent Line		64		n	n	3	3	1	1	1	1	1	no
IHSS	NE	111.2	Trench T-5		65		<1	<1	1	1	1	1	1	0.5	0.5	no
IHSS	700	139.1 N(a)	Hydroxide Tank, KOHm NaOH		66		n	n	23	23	1	1	1	0.5	0.5	no

TYPE	Area	ID	Description	Status	Rank1	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	ALF Score	SW Impact Score Multiplier	Potential for Further Release Multiplier	Professional Judgement Multiplier	Total Priority Score	Exceeds Tier I AL
			condensate													
IHSS	700	139.2	HF Acid Tank		67		n	n	19	19	1	1	1	0.5	0.5	no
IHSS	900	140	Haz Disposal Area		68		n	3	n	3	1	1	1	0.5	0.5	no
IHSS	NW	170	PU&D Storage Yard		69		n	n	12	12	1	1	1	0.5	0.5	no
IHSS	NW	174a	PU&D Yard - Drum Storage		70		n	n	12	12	1	1	1	0.5	0.5	no
PAC	700	700-1105	Transformer Leak - 779-1/779-2		NR		0	n	0	0	0	1	1	0.5	0	
IHSS	NE	111.3	Trench T-6		NR		n	<1	<1	<1	0	1	1	1	0	
IHSS	NE	111.5	Trench T-8		NR		<1	<1	<1	<1	0	1	1	1	0	
IHSS	NE	111.6	Trench T-9		NR		<1	<1	<1	<1	0	1	1	1	0	
IHSS	NE	111.7	Trench T-10		NR		n	tbd	tbd	<1	0	1	1	1	0	
IHSS	400	116.1	W. Loading Dock B447		NR		n	n	<1	0	0	1	1	1	0	
IHSS	400	116.2	S. Loading Dock B 444		NR		n	n	<1	0	0	1	1	1	0	
IHSS	700	118.2	Solvent Spills N B707		NR		<1	n	<1	0	0	1	1	1	0	
IHSS	700	126.1	Process Waste Tks. - Westermost		NR	<1	n	<1	<1	<1	0	1	3	1	0	
IHSS	700	126.2	Process Waste Tks. - Eastermost		NR	<1	n	<1	<1	<1	0	1	3	1	0	
IHSS	700	127	Low Level Rad Waste Leak		NR		n	n	<1	<1	0	1	1	1	0	
IHSS	300	128	Oil Burn Pit #1		NR		<1	n	<1	0	0	1	1	1	0	

TYPE	Area	ID	Description	Status	Rank1	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	ALF Score	SW Impact Score Multiplier	Potential for Further Release Multiplier	Professional Judgement Multiplier	Total Priority Score	Exceeds Tier I AL
IHSS	300	134(N)	Lithium Metal Site		NR		<1	<1	<1	<1	0	1	1	1	0	
IHSS	300	134(S)	Lithium Metal Destruction Site		NR		n	n	<1	<1	0	1	1	1	0	
IHSS	NE	142.1	Pond A-1		NR		n	<1	<1	0	0	1	1	0.5	0	
IHSS	SE	142.11	Pond C-2		NR		n	<1	<1	0	0	1	1	0.5	0	
IHSS	NE	142.12	Pond A-5		NR		<1	<1	<1	0	0	1	1	0.5	0	
IHSS	NE	142.2	Pond A-2		NR		n	<1	<1	0	0	1	1	0.5	0	
IHSS	NE	142.3	Pond A-3		NR		n	<1	<1	0	0	1	1	0.5	0	
IHSS	NE	142.4	Pond A-4		NR		<1	<1	<1	0	0	1	1	0.5	0	
IHSS	NE	142.5	Pond B-1		NR		n	<1	<1	0	0	1	1	1	0	
IHSS	NE	142.6	Pond B-2		NR		n	<1	<1	0	0	1	1	1	0	
IHSS	NE	142.7	Pond B-3		NR		n	<1	<1	0	0	1	1	1	0	
IHSS	NE	142.8	Pond B-4		NR		n	<1	<1	0	0	1	1	1	0	
IHSS	NE	142.9	Pond B-5		NR		<1	<1	<1	0	0	1	1	1	0	
IHSS	SE	142.10	Pond C-1		NR		n	<1	<1	0	0	1	1	0.5	0	
IHSS	700	146.1	Concrete Tanks		NR		n	n	n	0	0	1	1	2	0	
IHSS	700	146.2	Concrete Tanks		NR		n	n	n	0	0	1	1	2	0	
IHSS	700	146.3	Concrete Tanks		NR		n	n	n	0	0	1	1	2	0	
IHSS	700	146.4	Concrete Tanks		NR		n	n	n	0	0	1	1	2	0	

TYPE	Area	ID	Description	Status	Rank1	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	ALF Score	SW Impact Score Multiplier	Potential for Further Release Multiplier	Professional Judgement Multiplier	Total Priority Score	Exceeds Tier I AL
IHSS	700	146.5	Concrete Tanks		NR		n	n	n	0	0	1	1	2	0	
IHSS	700	146.6	Concrete Tanks		NR		n	n	n	0	0	1	1	2	0	
IHSS	700	150.4	Rad Site NW B750		NR		n	n	<1	<1	0	1	1	1	0	
IHSS	700	150.6	Rad Site S B779		NR		n	n	<1	0	0	1	1	1	0	
IHSS	700	150.7	Rad Site S B776		NR		n	n	<1	0	0	1	1	1	0	
IHSS	900	153	Oil Burn Pit No. 2		NR		<1	<1	n	<1	0	1	1	1	0	
IHSS	900	154	Pallet Burn Site		NR		n	n	<1	0	0	1	1	0.5	0	
IHSS	500	159	Rad Site B559		NR		<1	<1	n	<1	0	1	1	1	0	
IHSS	700	163.2	Americium Slab		NR		n	n	<1	0	0	1	1	1	0	
IHSS	800	164.3	Rad Site #2 800 Area, Bldg 887 Pad		NR		n	n	<1	0	0	1	1	1	0	
IHSS	500	169	Hydrogen Peroxide Drum Burial Waste		NR		n	n	n	0	0	1	1	0.5	0	
IHSS	900	173	Rad Site B991		NR		n	n	<1	0	0	1	1	0.5	0	
IHSS	400	182	444/453 Drum Stor.		NR		n	n	n	0	0	1	1	1	0	
IHSS	900	184	Rad Site 991 Steam		NR		n	n	<1	0	0	1	1	0.5	0	
IHSS	300	186	Valve Vaults 11.12.13		NR		n	n	<1	0	0	1	1	1	0	
IHSS	400	205	Sump #3 Acid Site (SE of B460)		NR		n	n	<1	0	0	1	1	1	0	
IHSS	400	207	Inactive B444 Acid Dumpster		NR		n	n	<1	0	0	1	1	1	0	

TYPE	Area	ID	Description	Status	Rank1	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	ALF Score	SW Impact Score Multiplier	Potential for Further Release Multiplier	Professional Judgement Multiplier	Total Priority Score	Exceeds Tier I AL
IHSS	400	208	Inactive 444/447 Wst Str		NR		n	n	<1	<1	0	1	1	1	0	
IHSS	900	213	904 Pad, Pondcrete Stor.		NR		n	n	n	0	0	1	1	1	0	
IHSS	NE	216.2	East Spray Field-Center Area		NR		n*	n	<1	0	0	1	1	1	0	
IHSS	NE	216.3	East Spray Field-South Area		NR		n*	n	<1	0	0	1	1	1	0	
UBC	700	B774	B774 UBC		NR		n	n	n	0	0	1	1	2	0	
TNK	700	T12	Tank 12 - OPWL		NR		n	n	n	0	0	1	1	1	0	
TNK	000	T31	Tank 31 - OPWL		NR		n	n	n	0	0	1	1	1	0	
TNK	500	T33	Tank 33 - OPWL		NR		n	n	n	0	0	1	1	1	0	
TNK	500	T34	Tank 34 - OPWL		NR		n	n	n	0	0	1	1	1	0	
TNK	500	T35	Tank 35 - OPWL		NR		n	n	n	0	0	1	1	1	0	
IHSS	700	139.1 N(a)	Hydroxide Tank, KOHm NaOH condensate		NR		n	n	n	n	0	1	1	1	0	
IHSS	700	139.1 N(b)	Hydroxide Tank		NR		n	n	n	n	0	1	1	1	0	
IHSS	700	144 (S)	Sewer Line Overflow		NR		n	n	n	n	0	1	1	1	0	
IHSS	700	147.1	MAAS Area		NR		<1	n	n	0	0	1	1	1	0	
IHSS	300	212	B371 Drum Storage		NR		n	n	n	n	0	1	1	1	0	
IHSS	700	215	Abandoned Sump near-774 Unit 55.13 T-		NR		n	n	n	0	0	1	1	1	0	

TYPE	Area	ID	Description	Status	Rank1	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	ALF Score	SW Impact Score Multiplier	Potential for Further Release Multiplier	Professional Judgement Multiplier	Total Priority Score	Exceeds Tier I AL
			40													
IHSS	700	123.2	Valve Vault W. of 707		NR		n	n	n							
IHSS	700	132	Rad Site 700 Area #4		NR		n	n	n							
PAC	000	000-500	Sanitary Sewer System		NR		n	n	n							
PAC	000	000-503	Solar Pond Water Spill Along Central Ave		NR		n	n	n							
PAC	000	000-504	New Process Waste Line		NR		n	n	n							
PAC	IA	000-505	Storm Drains		NR		n	n	n							
PAC	100	100-602	Building 123 Process Waste Line Break		NR		n	n	n							
PAC	100	100-609	Building 121 Security Incinerator		NR		n	n	n							
PAC	100	100-611	Building 123 Scrubbber Solution Spill		NR		n	n	n							
PAC	100	100-613	Asphalt Surface in Lay Down N Bldg 130 (formerly 000-501)		NR		n	n	n							
PAC	300	300-702	Pesticide Shed		NR		n	n	n							
PAC	400	400-802	Storage Shed B334		NR		n	n	n							
PAC	400	400-803	Misc Dumping, Building 460 Storm Drain		NR		n	n	n							

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PAC	400	400-804	Road North of Building 460		NR		n	n	n							
PAC	400	400-807	Sandblasting Area		NR		n	n	n							
PAC	400	400-810	Beryllium Fire - Bldg 444		NR		n	n	n							
PAC	400	400-813	RCRA Tank Leak in Bldg 460		NR		n	n	n							
PAC	400	400-815	RCRA Tank Leak in Bldg 460		NR		n	n	n							
PAC	500	500-906	Asphalt Surface Near Bldg 559		NR		n	n	n							
PAC	500	500-907	Tanker Truck Release of hazardous Waste From Tank 231B		NR		n	n	n							
PAC	600	600-1001	Temp. Waste Stor B663		NR		n	n	n							
PAC	600	600-1004	Central Avenue Ditch (formerly identified as 400-820)		NR		n	n	n							
PAC	600	600-1005	Former Pesticide Storage Area		NR		n	n	n							
PAC	700	700-1100	French Drain North of Bldg 776/777		NR		n	n	n							
PAC	700	700-1101	Laundry Tank Overflow - Bldg 732		NR		n	n	n							
PAC	700	700-1106	Process Waste Spill - Portal 1		NR		n	n	n							
PAC	700	700-1115	Identification of Diesel Fuel in Subsurface Soils		NR		n	n	n							

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PAC	700	700-1116	Transformer Leak South of Bldg 776		NR		n	n	n							
PAC	800	800-1200	Valve Vault 2		NR		n	n	n							
PAC	800	800-1201	Radioactive Site south of Bldg 883		NR		n	n	n							
PAC	800	800-1204	Bldg 866 Spills		NR		n	n	n							
PAC	800	800-1205	Bldg 881, East Dock		NR		n	n	n							
PAC	800	800-1212	Building 866 Sump Spill		NR		n	n	n							
PAC	900	900-1301	Bldg 991 Enclosed Area		NR		n	n	n							
PAC	900	900-1307	Explosive Bonding Pit		NR		n	n	n							
PAC	900	900-1308	Gasoline Spill Outside of Bldg 980		NR		n	n	n							
PAC	900	900-1310	ITS Water Spill (formerly 000-502)		NR		n	n	n							
PAC	NE	NE-1404	Diesel Spill at Pond B-2 Spillway		NR		n	n	n							
PAC	NE	NE-1407	OU2 Treatment Facility		NR		n	n	n							
PAC	NE	NE-1412	Trench T-12 Located @ OU2 East Trenches		NR		n	n	n							
PAC	NE	NE-1413	Trench T-13 Located @ OU2 East Trenches		NR		n	n	n							
PAC	NW	NW-1505	North Firing Range													

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PAC	SE	SE-1602	East Firing Range		NR		n	n	n							
UBC	100	B122	B122 UBC		NR		n	n	n							
UBC	100	B125	B125 UBC		NR		n	n	n							
UBC	300	B331	B331 UBC		NR		n	n	n							
UBC	300	B371	B371 UBC		NR		n	n	n							
UBC	300	B374	B374 UBC		NR		n	n	n							
UBC	400	B439	B439 UBC		NR		n	n	n							
UBC	400	B441	B441 UBC		NR		n	n	n							
UBC	400	B442	B442 UBC		NR		n	n	n							
UBC	400	B447	B447 UBC		NR		n	n	n							
UBC	500	B528	B528 UBC		NR		n	n	n							
UBC	500	B559	B559 UBC		NR		n	n	n							
UBC	700	B701	B701 UBC		NR		n	n	n							
UBC	700	B731	B731 UBC		NR		n	n	n							
UBC	700	B770	B770 UBC		NR		n	n	n							
UBC	700	B771	B771 UBC		NR		n	n	n							

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UBC	700	B776	B776 UBC		NR		n	n	n							
UBC	700	B777	B777 UBC		NR		n	n	n							
UBC	700	B778	B778 UBC		NR		n	n	n							
UBC	800	B865	B865 UBC		NR		n	n	n							
UBC	800	B883	B883 UBC		NR		n	n	n							
UBC	800	B886	B886 UBC		NR		n	<1	n	0	1	1	1	1	0	no
UBC	800	B887	B887 UBC		NR		n	n	n							
UBC	800	B889	B889 UBC		NR		n	n	n							
UBC	900	B991	B991 UBC		NR		n	n	n							
TNK	100	T01	Tank 1 - OPWL		NR	n	n	n	n							
TNK	400	T02	Tank 2 - OPWL		NR	n	n	n	n							
TNK	400	T03	Tank 3 - OPWL		NR	n	n	n	n							
TNK	400	T04	Tank 4 - OPWL		NR	n	n	n	n							
TNK	400	T05	Tank 5 - OPWL		NR	n	n	n	n							
TNK	400	T06	Tank 6 - OPWL		NR	n	n	n	n							
TNK	500	T07	Tank 7 - OPWL		NR	n	n	n	n							

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TNK	700	T08	Tank 8 - OPWL		NR	n	n	n	n							
TNK	700	T09	Tank 9 - OPWL		NR	n	n	n	n							
TNK	700	T10	Tank 10 - OPWL		NR	n	n	n	n							
TNK	700	T11	Tank 11 - OPWL		NR	n	n	n	n							
TNK	700	T13	Tank 13 - OPWL		NR	n	n	n	n							
TNK	700	T14	Tank 14 - OPWL		NR	n	n	n	n							
TNK	700	T15	Tank 15 - OPWL		NR	n	n	n	n							
TNK	700	T16	Tank 16 - OPWL		NR	n	n	n	n							
TNK	700	T17	Tank 17 - OPWL		NR	n	n	n	n							
TNK	700	T18	Tank 18 - OPWL		NR	n	n	n	n							
TNK	700	T19	Tank 19 - OPWL		NR	n	n	n	n							
TNK	700	T20	Tank 20 - OPWL		NR	n	n	n	n							
TNK	800	T21	Tank 21 - OPWL		NR	n	n	n	n							
TNK	800	T22	Tank 22 - OPWL		NR	n	n	n	n							
TNK	800	T23	Tank 23 - OPWL		NR	n	n	n	n							
TNK	800	T24	Tank 24 - OPWL		NR	n	n	n	n							

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TNK	800	T25	Tank 25 - OPWL		NR	n	n	n	n							
TNK	800	T26	Tank 26 - OPWL		NR	n	n	n	n							
TNK	700	T30	Tank 30 - OPWL		NR	n	n	n	n							
TNK	800	T32	Tank 32 - OPWL		NR	n	n	n	n							
TNK	700	T36	Tank 36 - OPWL		NR	n	n	n	n							
TNK	700	T37	Tank 37 - OPWL		NR	n	n	n	n							
TNK	700	T38	Tank 38 - OPWL		NR	n	n	n	n							
TNK	800	T39	Tank 39 - OPWL		NR	n	n	n	n							
IHSS	300	206	Inactive D-836 HW TK	PNFA			n	n	<1	0	0	1	1	1	0	no
IHSS	600	189	Nitric Acid Tanks	PNFA			<1	<1	<1	0	0	1	1	0.5	0	no
IHSS	NE	166.1	Landfill Trench A	PNFA			<1	<1	n	0	0	1	1	0.5	0	no
IHSS	NE	166.2	Landfill Trench B	PNFA			<1	<1	n	0	0	1	1	0.5	0	no
IHSS	NE	166.3	Landfill Trench C	PNFA			<1	<1	n	0	0	1	1	0.5	0	no
IHSS	NE	167.2	Landfill Pond Spray Area	PNFA			n	<1	<1	0	0	1	1	0.5	0	no
IHSS	NE	167.3	Landfill Pond Spray Area	PNFA			n	n	<1	0	0	1	1	0.5	0	no
IHSS	NE	216.1	East Spray Field-North Area	PNFA			n	<1	<1	0	0	1	1	0.5	0	no

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IHSS	SW	133.1	Ash Pit 1	PNFA			44	2	<1	46	2	1	1	1	2	no
IHSS	SW	133.2	Ash Pit 2	PNFA			44	2	<1	46	2	1	1	1	2	no
IHSS	SW	133.3	Ash Pit 3	PNFA			44	<1	<1	44	2	1	1	1	2	no
IHSS	SW	133.4	Ash Pit 4	PNFA			44	<1	2	46	2	1	1	1	2	no
IHSS	SW	133.5	Incinerator	PNFA			n	<1	<1	0	0	1	1	0.5	0	
IHSS	SW	133.6	Concrete Wash Pad	PNFA			n	<1	<1	0	0	1	1	0.5	0	
PAC	100	100-603	Building 123 Bioassay Waste Spill	PNFA			n	n	<1	<1	0	1	1	0.5	0	no
PAC	300	300-708	Transformer N of B371	PNFA												
PAC	300	300-709	Transformer Leak 334-1	PNFA												
PAC	300	300-711	Ni-Cad Battery Spil Outside Bldg 373	PNFA												
PAC	300	300-712	1/2 g Antifreeze Spill Outside Bldg 373	PNFA												
PAC	300	300-713	Caustic Spill N of Bldg 331	PNFA												
PAC	300	300-714	Laundry Waste Water Spill N of Bldg 374	PNFA												
PAC	400	400-812	Tank T-2 Spill I Building 460	PNFA			n	n	<1	0	0	1	1	0.5	0	no
PAC	400	400-814	A/C Compressor Release, Bldg 444 Roof	PNFA												
PAC	500	500-900	Transformer Leak 515/516	PNFA			0	<1	0	0	0	1	1	0.5	0	no

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PAC	500	500-901	Transformer Leak 555/558	PNFA			0	1	0	1	1	1	1	0.5	0.5	no
PAC	500	500-902	Transformer Leak 559	PNFA			0	<1	0	0	1	1	1	0.5	0.5	no
PAC	500	500-904	Transformer Leak 223-1/223-2	PNFA			0	n	19	19	1	1	1	0.5	0.5	no
PAC	500	500-905	Transformer Leak 558-1	PNFA												
PAC	500	500-909	Spent Photo Fixer Solution Release (IHSS 158)	PNFA												
PAC	600	600-1000	Transformer Storage B662	PNFA												
PAC	600	600-1002	Transformer Storage W B666	PNFA			0	n	<1	0	0	1	1	0.5	0	no
PAC	600	600-1003	Transformers N & S 661/675	PNFA			0	<1	0	0	0	1	1	0.5	0	no
PAC	700	700-1102	Transformer Leak - 776-4	PNFA			0	25	0	25	1	1	1	0.5	0.5	no
PAC	700	700-1103	Transformer Leak B707	PNFA												
PAC	700	700-1104	Transformer Leak B708	PNFA												
PAC	700	700-1111	Transformer Leak B750	PNFA			0	<1	0	0	0	1	1	0.5	0	no
PAC	700	700-1112	Transformer Leak B776-5	PNFA												
PAC	700	700-1113	IHSS 101	PNFA												
PAC	700	700-1114a	Release During Liquid Transfer Oper Bldg	PNFA												

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			774													
PAC	700	700-1114b	Release During Liquid Transfer Oper Bldg 774	PNFA												
PAC	800	800-1207	Transformer Leak 883-4	PNFA		0	0	2	2	2	1	1	1	1	1	no
PAC	800	800-1208	Transformer Leak 881-4	PNFA			0	6	6	2	1	1	1	1	1	no
PAC	800	800-1209	Transformer Leak 800 area	PNFA		0	0	9	9	2	1	1	1	1	1	no
PAC	800	800-1210	Transformers 865-1 & 865-2	PNFA		0	0	2	2	2	1	1	1	1	1	no
PAC	900	900-1306	Transformers 991-1 & 991-2	PNFA												
PAC	900	900-1314	Solar Evaporation Pond 207B Sludge Release	PNFA												
PAC	900	900-1315	Tanker Trk Release on E Patrol Rd, N of Spuce	PNFA												
PAC	900	900-1316	Elevated Chromium Identified During Geotechnical Drilling	PNFA												
PAC	900	900-1317	Soil from crate in 964 Laydown Yard	PNFA												
PAC	NE	NE-1410	Diesel fuel Spill at field Treatability Unit	PNFA												
PAC	NE	NE-1411	Diesel Fuel Overflowed from Tanker @ OU2	PNFA												

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PAC	NW	NW-1502	Disposal of Diesel Contaminated Material at Landfill (formerly NW-177)	PNFA												
PAC	NW	NW-1503	Disposal of Fuel Contaminated Material at Landfill	PNFA												
PAC	NW	NW-1504	Disposal of Thorosilane Contaminated Material at Landfill	PNFA												
PAC	SW	SW-1701	Recently Identified Ash Pit	PNFA			n	n	n							
PAC	SW	SW-1702	Recently Identified Ash Pit	PNFA			n	n	n							
IHSS	300	135	B373 CT Blowdown	NFA			n	n	<1	0	0	1	1	1	0	no
IHSS	300	151	Fuel Oil Leak Tk. 262	NFA			n	n	<1	0	0	1	1	1	0	no
IHSS	300	156.1	Rad Site	NFA			n	n	<1	0	0	1	1	1	0	no
IHSS	300	181	B334 Cargo Container Area	NFA			n	n	<1	0	0	1	1	1	0	no
IHSS	300	188	Acid Leak (SE of B374)	NFA			n	n	<1	0	0	1	1	1	0	no
IHSS	400	191	Hydrogen Perox. Leak	NFA			<1	<1	<1	0	0	1	1	1	0	no
IHSS	600	117.3	S. Chem. Storage Site	NFA			n	n	<1	0	0	1	1	1	0	no
IHSS	600	152	Fuel Oil Tank B452	NFA			n	n	n	0	0	1	1	1	0	no

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IHSS	600	164.1	Rad Site #2 800 Area	NFA			2	n	<1	2	1	1	1	0.5	0.5	no
IHSS	700	123.1	Valve Vault 7	NFA			n	n	<1	0	0	1	1	1	0	no
IHSS	700	150.5	Rad Site W B707 - (DUPLICATE OF 123.2)	NFA			na	na	na	na	na	1	1	1	0	
IHSS	800	147.2	B881 Conversion Act.	NFA			n	n	<1	0	0	1	1	1	0	no
IHSS	900	141	Sludge Disposal Area	NFA			<1	n	<1	0	0	1	1	0.5	0	no
IHSS	900	183	Gas Detox Area	NFA			n	n	n	0	0	1	1	0.5	0	
IHSS	900	210	B980 Cargo Cont.	NFA			n	n	<1	0	0	1	1	1	0	no
IHSS	000	172	Central Ave. Spill	NFA			n	n	<1	0	0	1	1	1	0	no
IHSS	NE	156.2	Soil Disposal Area	NFA			<1	<1	<1	0	0	1	1	1	0	no
IHSS	NE	167.1	Landfill Pond Spray Area	NFA			<1	<1	<1	0	0	1	1	0.5	0	no
IHSS	NW	203	Inactive HW Stor.	NFA			n	n	<1	0	0	1	1	0.5	0	no
IHSS	NW	174b	PU&D Yard - Dumpster Storage	NFA			n	n	12	12	1	1	1	0.5	0.5	no
IHSS	SE	209	Surface Disturbance	NFA			<1	<1	<1	0	0	1	1	0.5	0	no
PAC	100	100-600	Mercury Spill - Valve Vault 124-B B124	NFA												
PAC	100	100-601	Building 123 Phosphoric Acid Spill	NFA												
PAC	100	100-604	T-130 Complex Sewer Line Leaks	NFA												

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PAC	100	100-605	Building 115 Hydraulic Oil Spill	NFA												
PAC	100	100-606	Building 125 TCE Spill	NFA												
PAC	100	100-607	Building 111 Transformer PCB Leak	NFA			n	n	n							
PAC	100	100-608	Building 131 Transformer Leak	NFA												
PAC	100	100-610	Asbestos Release - Building 123	NFA												
PAC	100	100-612	Battery Solution Spill - Building 119	NFA												
PAC	300	300-700	Scrap Roofing Disposal	NFA												
PAC	300	300-701	Sulfuric Acid Spill, Bldg 371	NFA												
PAC	300	300-703	Building 331 North Area	NFA												
PAC	300	300-704	Roof Fire, Bldg 381	NFA												
PAC	300	300-705	Potassium Hydroxide Spill N. of Bldg 374	NFA												
PAC	300	300-706	Evaporator Tanks N. of Bldg 374	NFA												
PAC	300	300-707	Sanitizer Spill	NFA												
PAC	300	300-710	Gasoline Spill North of Building 331	NFA												
PAC	300	300-715	Battery Acid Spill	NFA												

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PAC	400	400-800	Transformer 443-1	NFA			0	1	0	1	1	1	1	0.5	0.5	no
PAC	400	400-805	Building 43 Tank #9 Leak	NFA												
PAC	400	400-806	Catalyst Spill, Building 440	NFA												
PAC	400	400-808	Vacuum Pump Leak, Building 442	NFA												
PAC	400	400-809	Oil Leak - 446 Guard Post	NFA												
PAC	400	400-811	Transformer 443-2, Bldg 443	NFA		0	0	<1	0	0	0	1	1	0.5	0	no
PAC	500	500-903	RCRA Storage Unit #1	NFA												
PAC	500	500-908	IHSS 156.1, 186	NFA												
PAC	600	600-1001(a)	Spills of Unknown Oil in PAC 600-1001 (SIR #318)	NFA												
PAC	700	700-1107	Compressor Waste Oil Spill - Building 776	NFA												
PAC	700	700-1109	Uranium Incident - Bldg 778	NFA												
PAC	700	700-1110	Nickel Carbonyl Burial West of Bldg 771	NFA												
PAC	700	700-1117	Bldg. 701 Water Line Soil Put-back	NFA												
PAC	800	800-1202	Sulfuric Acid Spill, Bldg 883	NFA												
PAC	800	800-1203	Sanitary Sewer Line Brk Btwn Bldg 865/866	NFA												

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PAC	800	800-1206	Fire, Bldg 883	NFA												
PAC	800	800-1211	Capacitor Leak, Bldg 883	NFA												
PAC	900	900-1300	RO Plant Sludge Drying beds	NFA												
PAC	900	900-1302	Gasoline Spill	NFA												
PAC	900	900-1303	Natural Gas Leak	NFA												
PAC	900	900-1304	Chromic Acid Spill - Bldg 991	NFA												
PAC	900	900-1305	Building 991 Roof	NFA												
PAC	900	900-1309	OU 2 Field Treatability Unit Spill	NFA												
PAC	900	900-1311	Septic Tanks East of Building 991	NFA												
PAC	900	900-1312	OU 2 Water Spill	NFA												
PAC	900	900-1313	Seep Area Near OU2 Influent	NFA												
PAC	900	900-1318	Release of F001 Listed Waste to Soil	NFA												
PAC	000	000-501	Roadway Spraying	NFA												
PAC	NE	NE-1400	Tear gas Powder Release	NFA												
PAC	NE	NE-1401	NE Buffer Zone Gas Line Break	NFA												

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PAC	NE	NE-1402	East Inner Gate PCB Spill	NFA												
PAC	NE	NE-1403	Gasoline Spill - Building 920 Guard Post	NFA												
PAC	NE	NE-1405	Diesel Spill at Field Treatability Unit	NFA												
PAC	NE	NE-1406	771 Hillside Sludge Release	NFA												
PAC	NE	NE-1408	OU2 Test Well (formerly NE-1406)	NFA												
PAC	NE	NE-1409	Modular Tanks and 910 Treatment Sys Spill (formerly 000-503)	NFA												
PAC	NW	NW-1500	Diesel Spill @ PU&D Yard (formerly NW-175)	NFA												
PAC	NW	NW-1501	Asbestos Release @ PU&D Yard (formerly NW-176)	NFA												
PAC	SE	SE-1600	Pond 7 - Steam Condensate Releases	NFA												
PAC	SE	SE-1601	Pond 8 - Colling Tower Discharge Releases	NFA												
PAC	SW	SW-1700	Fuel Spill into Woman Creek Drainage	NFA												
IHSS	000	192	Antifreeze Discharge	C-94			3	n	n	3	1	1	1	0.5	0.5	no
IHSS	700	185	Solvent Spill	C-94			n	n	n	0	0	1	1	0.5	0	no

TYPE	Area	ID	Description	Status	Rank1	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	ALF Score	SW Impact Score Multiplier	Potential for Further Release Multiplier	Professional Judgement Multiplier	Total Priority Score	Exceeds Tier I AL
IHSS	400	193	Steam Condensate Leak	C-94			n	n	1	1	0	1	1	0.5	0	no
IHSS	700	194	Steam Condensate Leak	C-94			n	n	n	0	0	1	1	0.5	0	no
IHSS	NW	195	Nickel Carbonyl Disposal	C-94			n	n	n	0	0	1	1	0.5	0	no
IHSS	SW	168	West Spray Field	C-95			190	<1	<1	190	4	1	1	0.5	2	no
IHSS	800	178	B 881 Drum Storage	C-95			n	n	n	0	0	1	1	0.5	0	no
IHSS	800	211	B881 Drum Storage	C-95			n	n	n	0	0	1	1	0.5	0	no
IHSS	800	217	B881 Cyanide Trt.	C-95			n	n	n	0	0	1	1	0.5	0	no
IHSS	800	179	B865 Drum Storage	C-95			n	n	n	0	0	1	1	0.5	0	no
IHSS	800	180	B883 Drum Storage	C-95			n	n	n	0	0	1	1	0.5	0	no
IHSS	400	204	Uranium Chip Roaster	C-95			n	n	n	0	0	1	1	0.5	0	no
IHSS	900	109	Ryan's Pit (Trench 2)	C-96	1		33679	2	<1	33681	10	2	3	1	60	yes
IHSS	NE	110	Trench T-3	C-96	2		26101	1612	<1	27713	10	2	3	1	60	yes
IHSS	NE	111.1	Trench T-4	C-96	3		26101	78	n	26179	10	2	3	1	60	yes
IHSS	900	113	Mound Area	C-97	5		19064	6	1	19071	9	3	2	1	54	yes
IHSS		199	Offsite Land Surface	C-97			n	<1	<1	0	0	1	1	0.5	0	no
IHSS		200	Great Western Res.	C-97			<1	<1	<1	0	0	1	1	0.5	0	no
IHSS		201	Standley Lake	C-97			<1	<1	<1	0	0	1	1	0.5	0	no

TYPE	Area	ID	Description	Status	Rank1	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	ALF Score	SW Impact Score Multiplier	Potential for Further Release Multiplier	Professional Judgement Multiplier	Total Priority Score	Exceeds Tier I AL
IHSS		202	Mower Reservoir	C-97			<1	<1	<1	0	0	1	1	0.5	0	no
IHSS	IZ	130	Rad Site - 800 Area	C-97			<1	34	<1	34	2	2	1	0.5	2	no
IHSS	800	104	Liquid Dumping	C-97			<1	10	<1	10	1	2	1	0.5	1	no
IHSS	900	119.2	E. Scrap Metal Storage	C-97			9	<1	<1	9	1	2	1	0.5	1	no
IHSS	800	102	Oil Sludge Pit	C-97			<1	<1	<1	<1	0	2	1	0.5	0	no
IHSS	800	103	Chemical Burial	C-97			<1	<1	<1	0	0	2	1	0.5	0	no
IHSS	800	105.1	West Out-of-Service Tank	C-97			<1	<1	<1	0	0	2	1	0.5	0	no
IHSS	800	105.2	East Out-of-Service Tank	C-97			<1	<1	<1	0	0	2	1	0.5	0	no
IHSS	800	106	106 Outfall	C-97			<1	<1	<1	0	0	2	1	0.5	0	no
IHSS	800	107	107 Hillside Oil Leak	C-97			<1	<1	<1	0	0	2	1	0.5	0	no
IHSS	800	145	Sanitary Waste Leak	C-97			<1	<1	<1	0	0	2	1	0.5	0	no
IHSS	900	108	Trench T-1	C-99	4		11	11080	<1	11091	9	1	3	2	54	yes
PLM		ETPLM	East Trenches Plume	IAC-99	7		26105	n	n	26105	10	3	1	1	30	yes
PLM		MNDPLM	Mound Plume	IAC-98	9		19067	n	n	19067	9	3	1	1	27	yes
TNK	800	T40	Tank 40-OPWL	IAC-96	10	3570	n	n	<1	3570	7	1	3	1	21	yes
IHSS	700	124.1	Rad Liq. Waste Tk. 66	IAC-96	11	1453	<1	<1	n	1453	7	1	3	1	21	yes
IHSS	700	124.2	Rad Liq. Waste Tk. 67	IAC-	11	1453	<1	<1	n	1453	7	1	3	1	21	yes

TYPE	Area	ID	Description	Status	Rank1	Total Tank Contents	Total Ground Water	Total Subsurface Soil	Total Surface Soil	Total Chemical Score	ALF Score	SW Impact Score Multiplier	Potential for Further Release Multiplier	Professional Judgement Multiplier	Total Priority Score	Exceeds Tier I AL
				96												
IHSS	700	125	Holding Tk. 66	IAC-96	11	1453	<1	<1	n	1453	7	1	3	1	21	yes
IHSS	400	122	Underground Conc. Tks.	IAC-96	12	751	270	<1	29	1050	7	1	3	1	21	yes
IHSS	700	124.3	Rad Liq. Waste Tk. 68	IAC-96	13	1000	<1	<1	n	1000	6	1	3	1	18	yes
PLM		SPPLM	Nitrate (Solar Pond) Plume	IAC-99	15		2403	n	n	2403	10	2	1	1	20	yes
IHSS	400	129	Oil Leak E of B443	IAC-96	31	<1	n	n	2	2	1	1	2	1	2	no

ATTACHMENT 7

LIST OF REPOSITORIES

List of Repositories

Rocky Flats Reading Room
Front Range Community College Library
3645 W. 112th Avenue
Westminster, Colorado 80030
(303) 469-4435

Colorado Department of Public Health and Environment
Rocky Flats Reading Room
c/o RFCA Project Coordinator
Hazardous Materials & Waste Management Division
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530
(303) 692-3367
(800) 886-7689

U.S. Environmental Protection Agency, Region VIII
Superfund Records Center
999 18th Street
Denver, Colorado 80202-2466
(303) 312-6473

ATTACHMENT 11

LIST OF ADDRESSES

List of Addresses

Environmental Protection Agency. Region VIII
ATTN: Rocky Flats Project Manager, EPR-FF
18th Street, Suite 500
Denver, Colorado 80202-2466

RFCA Project Coordinator
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

RFCA Project Coordinator
United States Department of Energy
Rocky Flats Field Office
10808 Highway 93, Unit A
Golden, Colorado 80403-8200

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ATTACHMENT 12

RFCA DOCUMENTS INDEX

RFCA Documents Index

1. Site Quality Assurance Program (QAP), Rev. 1, Kaiser-Hill Company L.L.C., effective February 2, 1996; as updated.

2. U.S. Department of Energy, Historical Release Report for the Rocky Flats Plant, Volumes I and II, June 1992; as updated.

3. Existing ER Standard Operating Procedures.

4. U.S. Department of Energy, Rocky Flats Site-wide Integrated Public Involvement Plan, U.S. Department of Energy, March 1998; as updated.

5. Treatability Study Work plans listed in the Administrative Record.

6. Site Health and Safety Program Manual, EG&G Rocky Flats, Inc., (Adopted by Kaiser-Hill Company, L.L.C. in July 1995) September 30, 1995 (Or most current version).

7. U.S. Department of Energy, Final Plan for Prevention of Contaminant Dispersion, February 1992.

8. U.S. Department of Energy, Background Geochemical Characterization Report, Rocky Flats Plant, September 30, 1993.

9. Final Treatability Studies Plan, Volumes I and II, August 1991. Approved by EPA on October 22, 1991.

10. Final resolutions of previous disputes that are relevant to implementation of RFCA. The Administrative Record shall be reviewed for such resolutions, and this list will be updated accordingly.

11. U.S. Department of Energy, Rocky Flats Environmental Technology Site, Integrated Monitoring Plan FY98/FY99, October 1998; as updated.

12. U.S. Department of Energy, Decommissioning Program Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, October 8, 1998. Approved by CDPHE on November 4, 1998. Approved by EPA on November 12, 1998; as updated.

13. U.S. Department of Energy, Final Surface Water Remedial Action Objectives Technical Memorandum, August 20, 2002. Approved by CDPHE and EPA on September 17, 2002.

14. U.S. Department of Energy, Final Work Plan for the Development of the Remedial Investigation and Feasibility Study Report for the Rocky Flats Technology Site, March 11, 2002. Approved by CDPHE on March 19, 2002 and approved by EPA on March 25, 2002.

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15. U.S. Department of Energy, Final 1997 Integrated Water Management Plan for the Rocky Flats Environmental Technology Site, A Working Group, February 1998 (RF/RMRS-97-078.UN).

16. U.S. Department of Energy, Rocky Flats Environmental Technology Site Natural Resource Management Policy, Rev. 0 September 30, 1998.

CAD/RODs

1. U.S. Department of Energy, Corrective Action Decision/Record of Decision, Operable Unit 1, Rocky Flats Environmental Technology Site, Golden, Colorado, February 1997. Approved March 1997.

2. U.S. Department of Energy, Final Major Modification to OU 1 881 Hillside Area CAD/ROD dated January 5, 2001. Approved February 2001.

3. U.S. Department of Energy, Corrective Action Decision/Record of Decision, Operable Unit 3, Rocky Flats Environmental Technology Site, Golden, Colorado, April 1997. Approved June 1997.

4. U.S. Department of Energy, Corrective Action Decision/Record of Decision, Operable Unit 11: West Spray Field, Rocky Flats Environmental Technology Site, Golden, Colorado, September 1995. Approved October 1995.

5. U.S. Department of Energy, Corrective Action Decision/Record of Decision, Operable Unit 15: Inside Building Closures, Rocky Flats Environmental Technology Site, Golden, Colorado, September 1995. Approved October 1995.

6. U.S. Department of Energy, Corrective Action Decision/Record of Decision, Operable Unit 16: Low Priorities Sites, Rocky Flats Environmental Technology Site, Golden, Colorado, August 1994. Approved October 1994.

Decontamination and Decommissioning (D&D)

1. U.S. Department of Energy, Building 123, Proposed Action Memorandum, Rocky Flats Environmental Technology Site, Golden, Colorado, August 1997. Approved by CDPHE on August 25, 1997.

2. U.S. Department of Energy, Final Close-out Report for Building 123 Decommissioning Project as Required by RFCA, Revision 0, September 1998. Revision 1, February 1999. Approved by CDPHE on March 10, 2000.

3. U.S. Department of Energy, B371/374 Closure Project Decommissioning Operations Plan (DOP), Rocky Flats Environmental Technology Site, Golden, Colorado, March 26, 2001. Approved by CDPHE on March 29, 2001.

4. U.S. Department of Energy, B707 Closure Project DOP, Rocky Flats Environmental Technology Site, Golden, Colorado, December 21, 2000. Approved by CDPHE on January 18, 2001.

5. U.S. Department of Energy, Building 771/774 Closure Project Decommissioning Operations Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, December 1998. Approved by CDPHE on January 11, 1999.

6. U.S. Department of Energy, Building 776/777 Closure Project Decommissioning Operations Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, November 3, 1999. Approved by CDPHE on November 5, 1999.

7. U.S. Department of Energy, Decommissioning Operations Plan for the 779 Cluster Interim Measure/Interim Remedial Action, Rocky Flats Environmental Technology Site, Golden, Colorado, February 1998. Approved by CDPHE on February 6, 1998.

8. U.S. Department of Energy, Decommissioning Closeout Report for the Building 779 Closure Project, April 1, 2000. Approved by CDPHE on January 26, 2001.

9. U.S. Department of Energy, Building 886 Cluster Closure Project Interim Measure/Interim Remedial Action, Rocky Flats Environmental Technology Site, Golden, Colorado, July 30, 1998. Approved by CDPHE on August 3, 1998.

10. U.S. Department of Energy, Closeout Report for the Building 980 Cluster, Revision 0 October 9, 1997.

11. U.S. Department of Energy, Sampling and Analysis Plan for the Decontamination & Decommissioning Monitoring of Buildings 991, 559, and 881. Approved by CDPHE on June 21, 2001.

12. U.S. Department of Energy, the Decontamination and Decommissioning (D&D) Characterization Protocol, November 20, 1998. Revision 3, April 23, 2001 approved by CDPHE on April 10, 2001.

    Note: Appendix D of this report is the Reconnaissance Level Characterization Plan, Revision 0, April 23, 2001. Approved by CDPHE on April 10, 2001.

13. U.S. Department of Energy, the Site-Wide Pre-Demolition Survey Plan, Revision 0, March 23, 2001. Approved by CDPHE on April 10, 2001.

14. U.S. Department of Energy, Proposed Action Memorandum (PAM) for Decommissioning Building Cluster 980 (B980), Revision 0, Rocky Flats Environmental Technology Site, Golden, Colorado, August 15, 1997. Approved by CDPHE on August 25, 1997.

D&D RSOPs

1. U.S. Department of Energy, RFCA Standard Operating Protocol (RSOP) for Recycling Concrete, Rocky Flats Environmental Technology Site, Golden, Colorado, September 28, 1999. Approved by CDPHE and EPA on October 18, 1999.

2. U.S. Department of Energy, RFCA Standard Operating Protocol for Facility Disposition, Rocky Flats Environmental Technology Site, August 14, 2000. Approved by EPA and CDPHE on October 5, 2000.

3. U.S. Department of Energy, RSOP for Facility Component Removal, Size Reduction, and Decontamination Activities, Rocky Flats Environmental Technology Site, Golden, Colorado, February 4, 2001. Approved by EPA and CDPHE on February 22, 2001.

ER IM/IRAs

1. U.S. Department of Energy, Final Interim Measures/Interim Remedial Action Decision Document for Rocky Flats Industrial Area, Rocky Flats Environmental Technology Site, Golden, Colorado, November 1994.

2. U.S. Department of Energy, Operable Unit 4 Solar Evaporation Ponds Interim Measures/Interim Remedial Action Decision Document, Rocky Flats Environmental Technology Site, Golden, Colorado, April 1, 1992. Approved by CDPHE and EPA on April 6, 1992.

3. U.S. Department of Energy, Interim Measures/Interim Remedial Action Plan and Decision Document, 881 Hillside Area, Operable Unit No. 1, Rocky Flats Plant, Golden, Colorado, January 1990.

4. U.S. Department of Energy, Final Surface Water Interim Measures/Interim Remedial Action Plan/Environmental Assessment and Decision Document South Walnut Creek Basin, Rocky Flats Plant, Golden, Colorado, March 1991. Approved by CDH on January 28, 1990.

   NOTE: The last two IM/IRA references (January 1990 IM/IRA for the 881 Hillside and the October 1994 IM/IRA for the South Walnut Creek Basin) were administratively combined in May 1995. CDPHE and EPA approved the consolidation of the treatment facilities in a letter dated September 14, 1995.

5. U.S. Department of Energy, Modification to the Final Surface Water Interim Remedial Action Plan Environmental Assessment and Decision Document South Walnut Creek Basin dated October 11, 1994. Approved by EPA on July 11, 1997.

6. U.S. Department of Energy, Termination of the Surface Water Interim Remedial Action Plan Environmental Assessment and Decision Document South Walnut Creek Basin dated October 1994. Approved July 28, 1998.

7. U.S. Department of Energy, Major Modification to the Interim Measures/Interim Remedial Action Plan and Decision Document, 881 Hillside Area Operable Unit No. 1, dated January 1990. Conditionally approved by EPA on August 27, 1997.

8. U.S. Department of Energy, Final Mound Site Plume Decision Document, Major Modification to the Final Surface Water Interim Measure/Interim Remedial Action Plan/Environmental Assessment and Decision Document for South Walnut Creek March 1991, Revised October 1994, Rocky Flats Environmental Technology Site, Golden, Colorado, September 30, 1997. Approved by EPA in September 1997.

9. U.S. Department of Energy, Interim Measure/Interim Remedial Action Decision Document, National Conversion Pilot Project, Stage II, Rocky Flats Field Office, Golden, Colorado, March 30, 1995.

   NOTE: Although this IM/IRA is regulated under RFCA, the IM/IRA provides that the activities conducted under the IM/IRA shall not become regulatory milestones. Further, the National Conversion Pilot Project work is funded in accordance with a Cooperative Assistance Agreement, and not though normal RFETS budget planning. The work being done under this IM/IRA ceased upon expiration of the funds provided under the Cooperative Assistance Agreement for Stage II. The IM/IRA work was not included in the Integrated Sitewide Baseline.

10. U.S. Department of Energy, Corrective Action Management Unit Interim Measure/Interim Remedial Action Decision Document and Application Support Document for Containerized Storage at the Rocky Flats Environmental Technology Site, Golden, Colorado, Final, August 1997. Approved by CDPHE on August 28, 1997.

11. U.S. Department of Energy, Corrective Action Management Unit Interim Measure/Interim Remedial Action Decision Document and Application Support Document for Bulk Storage at the Rocky Flats Environmental Technology Site, Golden, Colorado, Final, August 1997. Approved by CDPHE on August 28, 1997.

12. U.S. Department of Energy, Interim Measure/Interim Remedial Action for the Solar Ponds Plume Remediation Project, Rocky Flats Environmental Site, Golden, Colorado, June 11, 1999. Approved by CDPHE on June 11, 1999.

ER PAMs

1. U.S. Department of Energy, Proposed Action Memorandum Hotspot Removal Rocky Flats Plant Operable Unit 1, Rocky Flats Plant, Golden, Colorado, September 1994.

2. U.S. Department of Energy, Final Proposed Action Memorandum Remediation of Polychlorinated Biphenyls, Rocky Flats Environmental Technology Site, Golden, Colorado, May 1995. Approved by CDPHE on June 21, 1995.

3. U.S. Department of Energy, Proposed Action Memorandum Passive Seep Collection and Treatment System for Operable Unit 7, December 1994. Approved by CDPHE and EPA on December 8, 1994.

4. U.S. Department of Energy, Modified Proposed Action Memorandum Passive Seep Collection and Treatment System for Operable Unit 7, Rocky Flats Environmental Technology Site, Golden, Colorado, June 1995. Approved by CDPHE on June 26, 1995.

5. U.S. Department of Energy, Modified Proposed Action Memorandum Passive Seep Collection and Treatment System for Operable Unit 7, July 6, 1998. Approved by EPA on July 24, 1998.

6. U.S. Department of Energy, Final Proposed Action Memorandum for the Remediation of Individual Hazardous Substance Site 109, Ryan's Pit, Rocky Flats Environmental Technology Site, Golden, Colorado, August 24, 1995. Approved by CDPHE on August 9, 1995.

7. U.S. Department of Energy, Final Proposed Action Memorandum for the Remediation and Draft Modification of Colorado Hazardous Waste Corrective Action Section of the Operating Permit for Rocky Flats Environmental Technology Site, Golden, Colorado, October 1995. (Associated with storage and treatment of contaminated soil from expedited cleanup activities at IHSS 109, Ryan's Pit, OU 2). Revision 3, dated August 30, 2001.

8. U.S. Department of Energy, Proposed Action Memorandum Remediation for the Contaminant Stabilization of Underground Storage Tanks, Rocky Flats Environmental Technology Site, Golden, Colorado, April 6, 1996. Approved by CDPHE and EPA on May 15, 1996.

9. U.S. Department of Energy, Proposed Action Memorandum for the Source Removal at Trenches T-3 and T-4, IHSSs 110 and 111.1, Rocky Flats Environmental Technology Site, Golden, Colorado, August 24, 1995 and revised April 9, 1996. Approved by EPA on April 30, 1996.

10. U.S. Department of Energy, Final Proposed Action Memorandum for the Source Removal at the Mound Site, IHSS 113, Revision 0, Rocky Flats Environmental Technology Site, Golden, Colorado, February 3, 1997. Approved by EPA in February 1997.

11. U.S. Department of Energy, Final Proposed Action Memorandum for the Source Removal at Trench 1, IHSS 108, Rocky Flats Environmental Technology Site, Golden, Colorado, July 1997. Approved by EPA on August 27, 1997.

12. U.S. Department of Energy, Final Proposed Action Memorandum for the East Trenches Plume, Rocky Flats Environmental Technology Site, Golden, Colorado, February 4, 1999. Approved by EPA in February 1999.

13. U.S. Department of Energy, Proposed Action Memorandum of the Solar Evaporation Ponds, Rocky Flats Environmental Technology Site, Golden, Colorado, May 2003. Approved by CDPHE on May 22, 2003.

ER RSOPs

1. U.S. Department of Energy, RSOP for Soil and Asphalt Management, Rocky Flats Environmental Technology Site, Golden, Colorado, August 3, 2001. Approved by EPA and CDPHE on August 28, 2001.

2. U.S. Department of Energy, Environmental Restoration RFCA Standard Operating Protocol (ER RSOP) for Routine Soil Remediation, Rocky Flats Environmental Technology Site, January 2002.. Approved by CDPHE on January 11, 2002. Approved by EPA on March 15, 2002.

ER Sampling and Analysis Plans (SAPs)

1. U.S. Department of Energy, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June 2001. Approved by CDPHE on June 18, 2001.

2. U.S. Department of Energy, Buffer Zone Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June 2002. Approved by EPA on March 13, 2002.

APPENDIX 2

PROPOSED PQLS FOR RFCA ATTACHMENT 5, TABLE 1

Table1 - Surface Water Action Levels & Standards with Proposed PQL

Analyte	CAS Reference Number	Standards and Action Levels [a] (mg/L)	Basis [b]	Temporary Modifications [c] (mg/L)	PQLs [d] (mg/L)	Proposed PQL (mg/L)
Acenaphthylene	208-96-8	2.80E-06	W+F		1.00E-02	No Change (N/C)
Acrylonitrile	107-13-1	5.90E-05	W+F		5.00E-03	N/C
Aldrin	309-00-2	1.30E-07	W+F		1.00E-04	N/C
Arsenic, total recoverable	7440-38-2	1.80E-05	W+F			5.00E-03
Benzidine	92-87-5	1.20E-07	W+F		1.00E-02	5.00E-02
alpha-BHC	319-84-6	3.90E-06	W+F		5.00E-05	N/C
beta-BHC	319-85-7	1.40E-05	W+F		5.00E-05	6.00E-05
Benzo(a)anthracene	56-55-3	4.40E-06	W+F		1.00E-02	N/C
Benzo(a)pyrene	50-32-8	4.40E-06	W+F		2.00E-04	1.00E-02
Benzo(b)fluoranthene	205-99-2	4.40E-06	W+F		1.00E-02	N/C
Benzo(g,h,i)perylene	191-24-2	4.40E-06	W+F		1.00E-02	N/C
Benzo(k)fluoranthene	207-08-9	4.40E-06	W+F		1.00E-02	N/C
Bromodichloromethane	75-27-4	5.60E-04	W+F		1.00E-03	N/C
Carbon tetrachloride	56-23-5	2.50E-04	W+F	5.00E-03	1.00E-03	N/C
Chlordane	5103-71-9	2.10E-06	W+F		1.00E-03	5.00E-05
bis(2-Chloroethyl)ether	111-44-4	3.10E-05	W+F		1.00E-02	N/C
Chloropyrifos	2921-88-2	4.10E-05	AL		1.00E-04	N/C
Chromium VI, dissolved	18540-29-9	1.10E-02	TVS [h]			2.00E-02
Chrysene	218-01-9	4.40E-06	W+F		1.00E-02	N/C
4,4-DDD	72-54-8	8.30E-07	W+F		1.00E-04	1.10E-04
4,4-DDE	72-55-9	5.90E-07	W+F		1.00E-04	N/C
4,4-DDT	50-29-3	5.90E-07	W+F		1.00E-04	1.20E-04
Demeton	8065-48-3	1.00E-04	AL		1.00E-03	N/C
Dibenzo(a,h)anthracene	53-70-3	4.40E-06	W+F		1.00E-02	N/C
1,2-Dibromo-3-chloropropane	96-12-8	2.00E-04	WS		1.00E-03	N/C
3,3-Dichlorobenzidine	91-94-1	3.90E-05	W+F		1.00E-02	2.00E-02
1,2-Dichloroethane	107-06-2	3.80E-04	W+F, WS	5.00E-03	1.00E-03	N/C
1,2-Dichloropropane	78-87-5	5.20E-04	W+F, WS		1.00E-03	N/C
Dieldrin	60-57-1	1.40E-07	W+F		1.00E-04	N/C
4,6-Dinitro-2-methylphenol	534-52-1	2.70E-03	W+F, WS		5.00E-02	N/C
2,4-Dinitrophenol	51-28-5	1.40E-02	W+F, WS		5.00E-02	N/C
2,4-Dinitrotoluene	121-14-2	1.10E-04	W+F, WS		1.00E-02	N/C
Dioxin (2,3,7,8 TCDD)	1746-01-6	1.30E-11	W+F			1.00E-05
1,2-Diphenylhydrazine	122-66-7	4.00E-05	W+F			1.00E-02
Endosulfan sulfate	1031-07-8	5.60E-05	AL		1.00E-04	7.00E-04
Endrin (technical)	72-20-8	3.60E-05	AL		1.00E-04	N/C
Ethylene dibromide [1,2-Dibromomethane]	106-93-4	5.00E-05	WS			1.00E-03
bis(2-Ethylhexyl)phthalate	117-81-7	1.80E-03	W+F		1.00E-02	N/C
Guthion	86-50-0	1.00E-05	AL		1.50E-03	2.00E-03
Heptachlor	76-44-8	2.10E-07	W+F		5.00E-05	N/C
Heptachlor epoxide	1024-57-3	1.00E-07	W+F		5.00E-05	8.00E-05
Hexachlorobenzene	118-74-1	7.50E-07	W+F		1.00E-02	N/C
Hexachlorobutadiene	87-68-3	9.30E-03	AL		1.00E-02	N/C

Table1 - Surface Water Action Levels & Standards with Proposed PQL (continued)

Hexachlorocyclohexane, Technical	608-73-1	1.20E-05	W+F		2.00E-04	N/C
Hexachlorocyclopentadiene	77-47-4	5.00E-03	AL		1.00E-02	N/C
Hexachloroethane	67-72-1	7.00E-03	W+F, WS		1.00E-02	N/C
Indeno(1,2,3-cd)pyrene	193-39-5	4.40E-06	W+F		1.00E-02	N/C
Malathion	121-75-4	1.00E-04	AL		2.00E-04	2.00E-03
Mercury, total	7439-97-6	1.00E-05	SS		1.00E-03	1.00E-04
Methoxychlor	72-43-5	3.00E-05	AL		5.00E-04	1.80E-03
Mirex	2385-85-5	1.00E-06	AL		1.00E-04	N/C
Nitrobenzene	98-95-3	3.50E-03	W+F, WS		1.00E-02	N/C
Nitrosodibutylamine N	924-16-3	6.40E-06	W+F		1.00E-02	N/C
Nitrosodiethylamine N	55-18-5	8.00E-07	W+F		1.00E-02	2.00E-02
Nitrosodimethylamine N	62-75-9	6.90E-07	W+F		1.00E-02	2.0E-02*
n-Nitrosodiphenylamine	86-30-6	5.00E-03	W+F		1.00E-02	N/C
n-Nitrosodipropylamine	621-64-7	5.00E-06	W+F		1.00E-02	N/C
Nitrosopyrrolidine N	930-55-2	1.60E-05	W+F		1.00E-02	4.00E-02
PCBs	1336-36-3	1.70E-04	W+F		1.00E-02	N/C
Parathion	56-38-2	1.30E-05	AL			1.00E-02
Pentachlorobenzene	608-93-5	3.50E-03	W+F		1.00E-02	N/C
Pentachlorophenol	87-86-5	2.80E-04	W+F		5.00E-02	N/C
Phenanthrene	85-01-8	2.80E-06	W+F		1.00E-02	N/C
Silver, dissolved	7440-22-4	6.00E-04	TVS [h]		5.00E-03	1.00E-03
Simazine	122-34-9	4.00E-03	WS		7.00E-04	1.00E-03
1,2,4,5-Tetrachlorobenzene	95-94-3	2.10E-03	WS		1.00E-02	N/C
1,1,2,2-Tetrachloroethane	79-34-5	1.70E-04	W+F		1.00E-03	N/C
Tetrachloroethene	127-18-4	8.00E-04	W+F	5.00E-03	1.00E-03	N/C
Thallium	7440-28-0	5.00E-04	W+F, WS		1.20E-02	4.00E-03
Toxaphene	8001-35-2	2.00E-07	AL		3.00E-03	N/C
Trichloroethene	79-01-6	2.70E-03	W+F	5.00E-03	1.00E-03	N/C
2,4,6-Trichlorophenol	88-06-2	2.10E-03	W+F		5.00E-02	1.00E-02

N/C = No change to PQL as already listed

* = Laboratory cannot distinguish this compound from others (cannot separate)

APPENDIX 3

UPDATES TO RFCA APPENDIX 3, IGD, APPENDICES K, M, AND N

Requirement	Citation	Type	Comment
ATOMIC ENERGY ACT (AEA) [42 USC 2200 et. seq.]			
CHRONIC BERYLLIUM DISEASE PREVENTION PROGRAM • Definitions • Release criteria • Waste disposal • Warning labels	10 CFR 850 .3 .31 .32 .38 (b-c)	A	Establishes a program to reduce the number of worker currently exposed to beryllium in the course of their work at DOE facilities. The cited sections are followed in relation to determinations of beryllium contamination and release to the public.
RADIATION CONTROL			
Emergency Plan – required if material quantity exceeds Schedule E of Part 3 (e.g., 2 curies of alpha emitters) and evaluation shows maximum dose to offsite person from release exceeds 1 rem (5 rem to thyroid).	RH 3.9.11	A/L	DOE maintains its Emergency Plan in accordance with DOE Order 151.1, "Comprehensive Emergency Management System"
Decommissioning Plan Contents – must include a description of methods used to ensure protection of workers and the environment against radiation hazards during decommissioning.	RH 3.16.4.3.3	A	Planned implementation of Site approved procedures to meet 10 CFR 835, "Occupational Radiation Protection" and the Site's IWCP process will be described for proposed actions.
Decommissioning Plan Contents – must include a description of the planned final radiation survey.	RH 3.16.4.3.4	A/L	Planned implementation of the Decommissioning Characterization Protocols or any final sampling and analysis plan for environmental media will be described.
Decommissioning Plan Contents – must include a description of the intended final condition of the site, buildings and/or outdoor areas upon decommissioning.	RH 3.16.4.3.6	A/L	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
RADIATION CONTROL			
Decommissioning Plan Contents – if proposing to use the criteria in RH 4.61.3 or RH 4.61.4 (restricted access), the plan must include analysis demonstrating that reductions in residual radioactivity necessary to comply with the provisions of RH 4.61.2 (unrestricted access) would result in net public or environmental harm or were not being made because residual levels of contamination associated with restricted conditions are ALARA, taking into account consideration of any detriments expected to potentially result from decontamination and waste disposal.	RH 3.16.4.3.7.1	A/L	The analysis will be part of any accelerated action or final action regulatory decision document for environmental media cleanup projects proposing restricted access.
Decommissioning Plan Contents – if proposing to use the criteria in RH 4.61.3 or RH 4.61.4 (restricted access), the plan must include a description of the institutional controls necessary to satisfy RH 4.61.3.2 (described below), including a description of how the controls will be enforced.	RH 3.16.4.3.7.2	A/L	The description will be required for any final action regulatory decision document for environmental media cleanup projects proposing restricted access.
Decommissioning Plan Contents – if proposing to use the criteria in RH 4.61.3 or RH 4.61.4 (restricted access), the plan must include an analysis demonstrating that if institutional controls were no longer in effect, the dose criteria of RH 4.61.3.3 (described below) will be met.	RH 3.16.4.3.7.3	A/L	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
RADIATION CONTROL			
Decommissioning Plan will be approved by CDPHE if information therein meets RH 3.16, and RH 4.61, decommissioning is completed as soon as practicable, and health and safety of the public is adequately protected.	RH 3.16.4.6	A/L	This section also specifies requirements for a long term care warranty under RH 3.9.5.10 that may be required if using the criteria in RH 4.61.3 or RH 4.61.4 (restricted access). The RFCA Parties agree that further analysis is required to determine whether long term care warranty requirements are relevant and appropriate to Rocky Flats. Planned implementation of Site approved procedures to meet DOE Order 5400.5, "Radiation Protection of the Public and the Environment" and the Site's IWCP process, which includes Lead Regulatory Agency involvement, will be described for proposed actions. The Closure Project Baseline is focused on achieving decommissioning as soon as practicable.
Site radiation survey to establish residual contamination levels and/or confirm absence of contamination. As appropriate, survey building/outdoor areas that contain residual radioactivity.	RH 3.16.6.2	A/L	Requirements for radiation surveys are met through the Reconnaissance Level Characterization Survey Plans and Predemolition Survey Plans for facility decommissioning and through Sampling and Analysis Plans and the Integrated Monitoring Plan for Environmental Restoration.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
RADIATION CONTROL			
Submittal of final survey report, units and other information – specifies, as appropriate, that gamma levels be reported at 1 meter from surface in *micro*rem/hr, removeable and fixed contamination in DPM/100 cm^2, and radioactive concentrations in pCi/L or per gram; identify instruments used and certify proper calibration/testing.	RH 3.16.6.3	A/L	Same as RH 3.16.6.2 above
Criteria for license termination based on CDPHE determination that (1) radioactive materials have been properly disposed; (2) licensee has demonstrated that regulatory requirements for termination have been met; (3) the licensee has established a long-term care warranty; if required; and (4) institutional controls have been implemented to limit public doses, if required.	RH 3.16.7	A/L	Although license termination is not relevant to Rocky Flats, CDPHE believes the substantive criteria in this regulation are relevant and appropriate to determining the end point for decommissioning at Rocky Flats. Subsection (1) is met through compliance with the "offsite rule", 40 CFR 300.440; and subsections (2) and (4) are addressed in RH 4.61.2 through .4 (discussed below). Subsection (3), which is grounded in RH 3.9.5.10, is discussed above under RH 3.16.4.6.
Additional cleanup can be required if, based on new or previously unknown information, CDPHE finds that criteria in RH 4.61 not met and residual radioactivity remaining at site could result in significant threat to public health and safety.	RH 3.16.8	L	This standard is generally consistent with the "imminent and substantial endangerment" standard under CERCLA. Present risk of future harm (e.g., a risk of cancer due to long-term exposure) can be an "imminent" threat.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
RADIATION CONTROL			
Radiation Protection Program – To extent practicable, procedures and controls used shall be based on sound radiation protection principles to achieve public doses that are ALARA.	RH 4.5.2	A	Planned implementation of Site approved procedures to meet 10 CFR 835, "Occupational Radiation Protection", DOE Order 5400.5, "Radiation Protection of the Public and the Environment" and the Site's IWCP process, which includes Lead Regulatory Agency involvement, will be described for proposed actions.
Radiation Protection Program – Imposes constraint on air emissions of radioactive material to the environment, "Individual member of the public likely to receive the highest dose" will not be expected to receive a TEDE greater than 10 mrem/yr from air emissions. Requires exceedance reporting and corrective action to ensure against recurrence.	RH 4.5.4	A	**Listed only for completeness of this table. NESHAPS already identified as ARAR.** Radionuclide NESHAPS required monitoring established at site perimeter is used to determine potential for exposure to individual member of the public.
Dose limits for individual members of the public – TEDE from licensed operations less than 100 mrem/yr above background, exclusive of medical exposure and exposure from disposal by sanitary sewer. Dose rate in unrestricted areas less than 2 mrem/hr.	RH 4.14.1	A/L	Site approved procedures to meet DOE Order 5400.5, "Radiation Protection of the Public and the Environment" are based on the same dose rate limits.

Requirement	Citation	Type	Comment
RADIATION CONTROL			
Dose Limits for Individual Members of Public – Surveys of radiation levels in unrestricted areas and radioactive materials in effluents released to unrestricted areas shall be made to demonstrate compliance with the dose limits for individual members of the public in RH 4.14.	RH 4.15.1	A/L	Surveys are conducted pursuant to site approved procedures to meet DOE Order 5400.5, "Radiation Protection of the Public and the Environment". Radionuclide NESHAPS required monitoring established at site perimeter is used to determine potential for exposure to individual member of the public. Surface water is monitored in accordance with the Integrated Monitoring Plan and RFCA Attachment 5.
Dose Limits for Individual Members of Public – Provides the means to demonstrate compliance with RH 4.14: by measurement or calculation that dose does not exceed the annual limit or by demonstrating that annual average radioactive material concentration released in gaseous and liquid effluents at boundary of the unrestricted area does not exceed Appendix B, Table II, "Effluent Concentrations".	RH 4.15.2.1 and .2	L	Site approved procedures to meet DOE Order 5400.5, "Radiation Protection of the Public and the Environment" are based on the same dose rate limits. Radionuclide NESHAPS required monitoring established at site perimeter is used to determine potential for exposure to individual member of the public. Surface water is monitored in accordance with the Integrated Monitoring Plan and RFCA Attachment 5.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
RADIATION CONTROL			
Surveys shall be made as necessary to evaluate radiation levels, concentrations of radioactive material and potential radiological hazards that could be present.	RH 4.17.1	A/L	Planned implementation of Site approved procedures to meet 10 CFR 835, "Occupational Radiation Protection", DOE Order 5400.5, "Radiation Protection of the Public and the Environment" and the Site's IWCP process, which includes Lead Regulatory Agency involvement, will be described for proposed actions. Requirements for radiation surveys are met through the Reconnaissance Level Characterization Survey Plans and Predemolition Survey Plans for facility decommissioning and through Sampling and Analysis Plans and the Integrated Monitoring Plan for Environmental Restoration.
Instruments and equipment used for qualitative radiation measurements must be calibrated at intervals NTE 12 months, unless otherwise noted by regulation.	RH 4.17.2	A	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
RADIATION CONTROL			
Waste Disposal – Shall dispose only by transfer to authorized recipient, by release in effluents within the limits of subpart RH 4.14 (discussed above), or as authorized pursuant to (pertinent to RFETS) RH 4.34, "Method for Obtaining Approval of Proposed Disposal Procedures", or RH 4.35, "Disposal by Release into Sanitary Sewerage".	RH 4.33	A/L	Transfer to authorized recipient is met through compliance with the "offsite rule", 40 CFR 300.440. Proposals for onsite disposal of radioactive waste (if any) will be part of any accelerated action, or any final action regulatory decision document for environmental media cleanup projects proposing specific disposal methods. **RH Part 11, "Special Land Ownership Requirements" which addresses requirements if government ownership of RFETS is transferred to private ownership, and RH Part 14, "Licensing Requirements for Land Disposal of Low Level Radioactive Waste" will be reviewed for relevant and appropriate requirements for cleanup projects proposing specific disposal methods.**
Disposal by Release to Sanitary Sewer – Material must be "readily soluble" in water, monthly average concentrations below Appendix B, Table III, "Concentrations for Release to sanitary Sewerage". Total less than 1 curie/year.	RH 4.35	A	Site approved procedures to meet DOE Order 5400.5, "Radiation Protection of the Public and the Environment" are based on the same concentration limits. Required radionuclide monitoring for the discharge of the RFETS Sewage treatment Plant is established in the Rocky Flats NPDES Permit. Surface water is also monitored in accordance with the Integrated Monitoring Plan and RFCA Attachment 5.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
RADIATION CONTROL			
Permissible levels of plutonium in uncontrolled areas – Soil concentration greater than 2 DPM per gram or per cm^2 presents sufficient hazard to the public health that requires use of special construction techniques.	RH 4.60	A/L	All of RFETS is a controlled area as defined in 10 CFR 20.1003 ("controlled area", outside of a restricted area but inside the site boundary, access to which can be limited by the licensee for any reason) and RH 1.4 ("uncontrolled area" means area, access to which is neither limited nor controlled by the licensee). These terms are also consistent with 10 CFR 835.2. DOE does not anticipate any construction in uncontrolled areas to decommission RFETS.
Radiological Criteria for License Termination (i.e., for Decommissioning) – Must calculate maximum TEDE to "average member of the critical group" within the first 1000 years after decommissioning. NOTE: Decommissioning criteria in section RH 4.61 do not apply to waste disposal cells.	RH 4.61.1.2	A/L	Although license termination is not relevant to Rocky Flats, CDPHE believes the substantive criteria in this regulation are relevant and appropriate standards for decommissioning Rocky Flats. **See the RSAL Regulatory Analysis for the RFCA Parties understandings regarding implementation of the "Decommissioning Rule".**
Radiological Criteria (for Decommissioning) – Determination of dose and residual activity levels which are ALARA, must take into account consideration of any detriments expected to potentially result from decontamination and waste disposal.	RH 4.61.1.3	A/L	The analysis will be part of any accelerated action for environmental media cleanup projects and any final action regulatory decision document.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
RADIATION CONTROL			
Criteria for Unrestricted Use – Residual radioactivity above background has been reduced to levels that are ALARA and results in TEDE to average member of the critical group that does not exceed 25 mrem/yr., including groundwater sources of drinking water.	RH 4.61.2	A/L	The analysis will be part of any accelerated action for environmental media cleanup projects and any final action regulatory decision document.
Criteria for Restricted Use – Must demonstrate that further residual radioactivity reductions to meet Unrestricted Use: 1) would result in net public or environmental harm OR 2) are not being made because residual levels are ALARA.	RH 4.61.3.1	A/L	
Criteria for Restricted Use – 1) Provisions made for durable, legally enforceable institutional controls that provide reasonable assurance that TEDE to average member of the critical group will not exceed 25 mrem/yr. AND 2) If Institutional Controls were no longer in effect, TEDE above background is ALARA and would not exceed either: 100 mrem/yr. OR 500 mrem/yr., if demonstrated that further reductions are not technically achievable, would be prohibitively expensive or would result in net public or environmental harm.	RH 4.61.3.2 and .3	A/L	

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Requirement	Citation	Type	Comment
RADIATION CONTROL			
Alternate (Decommissioning) Criteria – 1) Analysis provides assurance that public health and safety would continue to be protected and unlikely TEDE would be more than 100 mrem/yr. 2) Employment of restrictions on site use that minimize exposures at the site. 3) Doses are reduced to ALARA.	RH 4.61.4.1.1 through .3	A/L	
CLEAN AIR ACT (CAA) [42 USC 7401 et. seq.]			
NATIONAL AMBIENT AIR QUALITY STANDARDS{tc \l2 "AMBIENT AIR QUALITY STANDARDS} • Sulfur Dioxide • Particulate Matter (PM10 & PM2.5) • Carbon Monoxide • Ozone • Nitrogen Dioxide • Lead	5 CCR 1001-14 [40 CFR 50]	C	National Ambient Air Quality Standards (NAAQS) define levels of air quality which are deemed necessary, with an adequate margin of safety, to protect the public health. The standards are the basis for air quality regulations that are designed to improve and protect air quality. The Denver metro area exceeds the standard for particulate matter and carbon monoxide (i.e. non-attainment for those pollutants). Ambient air quality standards are not effluent discharge limitations; they are used in conjunction with air dispersion modeling to establish emission limits that are protective of air quality. Air Quality Management personnel will review projects for Prevention of Significant Deterioration and Non-attainment Area permitting requirements, and perform modeling, if requested by CDPHE, to demonstrate compliance with the NAAQS.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
CLEAN AIR ACT (CAA) [42 USC 7401 et. seq.]			
COLORADO AIR QUALITY CONTROL COMMISSION (CAQCC) REGULATIONS{tc \l2 "COLORADO AIR POLLUTION REGULATIONS}	5 CCR 1001 [40 CFR 52, Subpart G]		
• Emission Control Regulations for Particulates, Smokes, Carbon Monoxide, and Sulfur Oxides	CAQCC Reg. No. 1 [5 CCR 1001-3]		
- Smoke and Opacity	Section II.A.1	C	Air pollutant emissions from stationary sources shall not exceed 20% opacity (emissions from fuel-fired pumps, generators, and compressors, process vents/stacks, etc.).
- Fugitive Particulate Emissions - Construction Activities - Storage and Handling of Material - Haul Roads - Haul Trucks - Demolition Activities - Sandblasting Operations	Section III.D III.D.2(b) III.D.2(c) III.D.2(e) III.D.2(f) III.D.2(h) III.D.2(j)	A	Every activity shall employ control measures and operating procedures that are technologically feasible and economically reasonable which reduce, prevent, and control fugitive particulate emissions (control plans, use of control equipment, watering, etc.).
• Odor Emissions	CAQCC Reg. No. 2 [5 CCR 1001-4]	C	Regulation No. 2 prohibits odorous air contaminants from any single source to be emitted in detectable odors which are measured in excess of the air standards.
• Air Pollutant Emission Notices (APEN), Construction Permits and Fees, Operating Permits, and Including the Prevention of Significant Deterioration - APEN Requirements	CAQCC Reg. No. 3 [5 CCR 1001-5] Part A, Section II	C	An APEN shall be filed with the CDPHE prior to construction, modification or alteration of, or allowing emissions of air pollutants from any activity. Certain activities are exempted from APEN requirements per specific exemptions listed in the regulation.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
CLEAN AIR ACT (CAA) [42 USC 7401 et. seq.]			
- Construction Permits, Including Regulations for the Prevention of Significant Deterioration (PSD)	Part B		
- Construction Permits	Part B, Section III	C	Construction permits are not required for CERCLA activities, however, substantive requirements that would normally be associated with construction permits will apply. Also, fuel-fired equipment (generators, compressors, etc.) associated with these activities may require permitting.
- Non-attainment Area Requirements	Section IV.D.2	A, C, L	Even though CERCLA activities are exempt from construction permit requirements, non-attainment area requirements may apply if emissions of certain pollutants exceed certain threshold limits. The requirements include emissions reductions or offsets, and strict emission control requirements.
- Prevention of Significant Deterioration Requirements	Section IV.D.3	A, C, L	Even though CERCLA activities are exempt from construction permit requirements, PSD requirements may apply if emissions of certain pollutants exceed certain threshold limits. The requirements include strict emission control requirements, source impact modeling, and pre-construction and post-construction monitoring.

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Requirement	Citation	Type	Comment
CLEAN AIR ACT (CAA) [42 USC 7401 et. seq.]			
• Standards of Performance for New Stationary Sources	CAQCC Reg. No. 6 [5 CCR 1001-8]	A	New Source Performance Standards exist for various types of stationary sources. Currently, no standards exist for demolition activities. A standard exists for organic liquid strorage vessels greater than 10,000 gallons (40 CFR 60, Subpart Kb). This standard will apply to closure activities utilizing this type of storage vessel.
• Emissions of Volatile Organic Compounds (VOCs)	CAQCC Reg. No. 7 [5 CCR 1001-9]		
- General Requirements for Storage and Transfer of VOCs	Section III.B	A	This requirement applies to the transfer of organic liquids to a tank larger than 56 gallons (bottom fill or submerged fill must be utilized).
- Disposal of VOCs	Section V	A	This requirement prohibits the disposal of VOCs by evaporation and spillage.
- Storage and Transfer of Petroleum Liquid	Section VI	A	This requirement regulates storage and transfer of petroleum liquids.
• Control of Hazardous Air Pollutants	CAQCC Reg. No. 8 [5 CCR 1001-10]		
- Part A, Subpart A, General Provisions (CAQCC regulation incorporates CFR by reference)	40 CFR Part 61, Subpart A	C	This subpart details the general provisions that apply to sources subject to National Emission Standards for Hazardous Air Pollutants (NESHAPs). The provisions will apply to any D&D project that is subject to a

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
CLEAN AIR ACT (CAA) [42 USC 7401 et. seq.]			
- Part A, Subpart C, National Emission Standard for Beryllium (CAQCC regulation incorporates CFR by reference)	40 CFR Part 61, Subpart C	C	NESHAP. This subpart details the regulatory requirements for emissions of beryllium from specific stationary source categories, such as machine shops or incinerators that process/machine beryllium. The requirements may apply to any D&D project that includes size reduction of beryllium containing materials.
- Part B, The Control of Asbestos	Section II	C	This requirement will apply if the project includes asbestos abatement. Compliance requires that asbestos inspectors, asbestos abatement workers, and asbestos abatement project managers are certified in accordance with the regulation.
	Section III	C	This section details project requirements including notification, permitting, and asbestos abatement work practices.
	Section III.B.1.a.(i)	C	A written notice of the intent to conduct demolition (regardless of whether asbestos is involved) or asbestos abatement must be submitted to the CDPHE, Air Pollution Control Division at least 10 working days before commencing demolition or an abatement project (form supplied by the CDPHE). This notification should be submitted within the decision document or as a modification to the approved decision document.
- Part C, Lead	Section I	C	This requirement applies if the project produces lead emissions (glovebox size reduction, etc.). Compliance requires utilizing a suitable dispersion model to ensure that emissions of lead will not result in an ambient lead

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Requirement	Citation	Type	Comment
CLEAN AIR ACT (CAA) [42 USC 7401 et. seq.]			
			concentration that exceeds 1.5 micrograms per cubic meter averaged over a one-month period.
• Control of Emissions of Ozone-Depleting Compounds	CAQCC Reg. No. 15 [5 CCR 1001-19]	C	This requirement applies if any refrigeration system or appliance that contains a regulated ozone-depleting compound (ODC) is disassembled or discarded. Compliance requirements include having registered and certified technicians recover all regulated ODCs in an approved vessel, by an approved method, prior to disassembly or disposal.
NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS{tc \l2 "NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS}			
• National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities	40 CFR 61, Subpart H		
- Standard	61.92	C, L	This section establishes a radionuclide emission standard equal to those emissions that yield an effective dose equivalent (EDE) of 10 mrem/year to any member of the public. The Site complies by using stack effluent discharge data and empirically estimated fugitive emissions in the dose model CAP88-PC for calculating the EDE to the most impacted member of the public to ensure that it does nor exceed 10 mrem/year. Also, the perimeter samplers in the Radioactive Ambient Air Monitoring Program sampler network are utilized to verify compliance with the standard.

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Requirement	Citation	Type	Comment
CLEAN AIR ACT (CAA) [42 USC 7401 et. seq.]			
- Emission Monitoring and Test Procedures	61.93	C, A	This section establishes emission monitoring and testing protocols required to measure radionuclide emissions and calculate EDEs. This section also requires that radionuclide emissions measurements (stack monitoring) be made at all release points which have a potential to discharge radionuclides into the air which could cause an EDE to the most impacted member of the public in excess of 1% of the standard (0.1 millirem/year).
- Compliance and Reporting	61.96	C, L	This section requires the Site to perform radionuclide air emission assessments of all new and modified sources. For sources that exceed the 0.1 mrem/year EDE threshold (controlled), the appropriate applications for approval must be submitted to the EPA and the CDPHE. Additional substantive requirements may apply if the activity requires approval.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
FEDERAL WATER POLLUTION CONTROL ACT [33 USC 1251 et. seq.]			
WATER QUALITY CRITERIA – GOLD BOOK{tc \l 2 "QUALITY CRITERIA – GOLD BOOK"}	33 USC 1314 (CWA Section 304)	C	The "Gold Book" presents guidelines with respect to water quality criteria for toxic pollutants. Criteria are published for aquatic and human health. The water quality criteria are not promulgated standards; however, they are established guidelines used for developing NPDES permits and may be considered potentially relevant and appropriate. WQC should not be used as effluent limits, rather discharge limits should be established either through the NPDES or UIC permitting process. Although water criteria are non-promulgated and non-enforceable standards, Section 121(d)(2)(B)(I) of CERCLA as implemented by the NCP (40 CFR 300.430(e)(2)(I)(E)) specifies that WQC established under Sections 303 and 304 of the CWA shall be attained where relevant and appropriate under the circumstances of the release. The designated or potential use of the surface or groundwater, the environmental media affected, the purpose for which the WQC were developed, and the latest information are to be considered in determining the relevance and appropriateness of the WQC to the response action. Therefore, the need to comply with WQC as a relevant and appropriate requirement needs to be determined on a case-by-case basis using the factors listed above.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
FEDERAL WATER POLLUTION CONTROL ACT (aka Clean Water Act (CWA)) [33 USC 1251 et. seq.]			
COLORADO BASIC STANDARDS AND METHODOLOGIES FOR SURFACE WATER	5 CCR 1002-31	C	Refer to RFCA Attachment 5 for surface water action levels and standards.
COLORADO BASIC STANDARDS FOR GROUNDWATER	5 CCR 1002-41	C	Refer to RFCA Attachment 5 for ground water action levels.
TOXIC POLLUTANT EFFLUENT STANDARDS • Toxic Pollutants • Compliance	40 CFR 129.4 40 CFR 129.5	C	If the permitted point is used, then the NPDES permit discharge standards would be met.
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM REGULATIONS • Designation of Hazardous Substances • Determination of Reportable Quantities for Hazardous Substances • Applicability of Best Management Practices • Best Management Practices Programs	40 CFR 116 40 CFR 117 40 CFR 125.102 40 CFR 125.104	A	These subparts are applicable to storage and use of products that contain toxic and hazardous pollutants above reportable quantity limitations, at a facility covered by an NPDES permit. In decision documents, identify and protect all connections to the sanitary collection system.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
FEDERAL WATER POLLUTION CONTROL ACT (aka Clean Water Act (CWA)) [33 USC 1251 et. seq.]			
DISCHARGES OF DREDGED OR FILL MATERIAL INTO WATERS OF THE UNITED STATES • Discharges Requiring Permits	33 USC 1344 33 CFR 323.3	/L	
DOE COMPLIANCE WITH FLOODPLAIN/WETLANDS ENVIRONMENTAL REVIEW REQUIREMENTS • Floodplain/Wetlands Determination • Floodplain/Wetlands Assessment • Applicant Responsibilities	10 CFR 1022 .11 .12 .13	A/L	
NATURAL RESOURCE AND WILDLIFE PROTECTION LAWS			
ENDANGERED SPECIES ACT (ESA [16 USC 1531 et seq.]			
EARLY CONSULTATION	50 CFR 402.11	A/L	Identify and minimize early in the planning stage of an action, any potential conflicts between the action and federally listed species.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
NATURAL RESOURCE AND WILDLIFE PROTECTION LAWS			
ENDANGERED SPECIES ACT (ESA [16 USC 1531 et seq.]			
BIOLOGICAL ASSESSMENT{tc \l 3 "ASSESSMENT"} • Purpose • Preparation Requirements • Request for Information • Director's Response - No Listed Species or Critical Habitat Present - Listed Species or Critical Habitat Present • Verification of Current Accuracy of Species List • Contents • Identical/Similar to Previous Action • Permit Requirements • Completion Time • Submission of Biological Assessment • Use of Biological Assessment	50 CFR 402.12	A/L	This is the process DOE needs to follow to evaluate the potential effects of the action on listed and proposed species and designated and proposed critical habitat and determine whether any such species or habitat are likely to be adversely affected by the action and is used in determining whether formal consultation or a conference is necessary.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
NATURAL RESOURCE AND WILDLIFE PROTECTION LAWS			
ENDANGERED SPECIES ACT (ESA [16 USC 1531 et seq.]			
INTERAGENCY COOPERATION • Informal Consultation • Formal Consultation	50 CFR 402 .13 .14	A/L	This is an optional process that includes all discussions, correspondence, etc. between the USFWS and the DOE. It is designed to assist in determining whether formal consultation or a conference is required. If during this step it is determined by the DOE with the written concurrence of the USFWS that the action is not likely to adversely affect listed species or critical habitat, the consultation process is terminated and no further action is necessary. DOE shall review its actions at the earliest possible time to determine whether any action may affect listed species or critical habitat.
MIGRATORY BIRD TREATY {tc \l2 "BIRD TREATY "}[16 USC 701-715]			
TAKING, POSSESSION, TRANSPORTATION, SALE, PURCHASE, BARTER, EXPORTATION, AND IMPORTATION OF WILDLIFE AND PLANTS {tc \l3 ", POSSESSION, TRANSPORTATION, SALE, PURCHASE, BARTER, EXPORTATION, AND IMPORTATION OF WILDLIFE AND PLANTS"}	50 CFR 10	A/L	Principally focuses on the taking and possession of birds protected under this regulation. Enforcement is predicated on location of the project and time of the year. Current list of protected birds is kept with the Ecology group.

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
NATURAL RESOURCE AND WILDLIFE PROTECTION LAWS			
COLORADO NONGAME, ENDANGERED, OR THREATENED SPECIES CONSERVATION ACT [CRS 33-1-115, 33-2-101 to 33-2-107]			
• Compliance with the Colorado Nongame Wildlife including Endangered Species	CRS 33-2-104 CRS 33-2-105	A/L	It is unlawful for any person to take, possess, transport, export, process, sell or offer for sale, or ship and for any common contract carrier to knowingly transport or receive for shipment any species or subspecies of wildlife appearing on the list of wildlife indigenous to the State of Colorado determined to be endangered within the state. (The list is continually updated by the Ecology group)
FISH AND WILDLIFE COORDINATION ACT [16 USC 661 et seq.]			
• Purpose • Impounding, Diverting, or Controlling of Waters • Impoundment or Diversion of Waters • Rules and Regulations • Effects of Sewage and Industrial Waters • Authorization of Appropriations • Penalties • Definitions	16 USC 661 16 USC 662 16 USC 663 16 USC 664 16 USC 665 16 USC 666 16 USC 666(a) 16 USC 666(b)	A/L	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
NATURAL RESOURCE AND WILDLIFE PROTECTION LAWS			
NATIONAL HISTORIC PRESERVATION ACT (NHPA [16 USC 470 et. seq.]			
IDENTIFYING HISTORIC PROPERTIES • Assessing Information Needs • Locating Historic Properties • Evaluating Historical Significance • When No Historic Properties Are Found • Historic Property Found	36 CFR 800.4	L	Obligations are met through the Programmatic Agreement among the DOE, Colorado State Historic Preservation Officer and the Advisory Council on Historic Preservation regarding Historic Properties at RFETS, July 17, 1997.
ASSESSING EFFECTS OF THE ACTIVITY ON THE PROPERTY	36 CFR 800.5	L	
DOCUMENTATION REQUIREMENTS	36 CFR 800.8	L	
CRITERIA OF EFFECT AND ADVERSE EFFECT	36 CFR 800.9	L	
PROTECTING NATIONAL HISTORIC LANDMARKS	36 CFR 800.10	L	
HISTORIC PROPERTIES DISCOVERED DURING IMPLEMENTATION	36 CFR 800.11	L	
EMERGENCY UNDERTAKINGS	36 CFR 800.12	L	
PRESERVATION OF AMERICAN ANTIQUITIES	43 CFR 3	L	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
NATIONAL RESOURCE AND WILDLIFE PROTECTION LAWS			
ARCHEOLOGICAL RESOURCES PROTECTION [16 USC 470, CHAPTER 1B]			
PROTECTION OF ARCHEOLOGICAL RESOURCES: UNIFORM REGULATIONS	36 CFR 296	L	
• Purpose	.1		
• Authority	.2		
• Definitions	.3		
• Prohibited Acts	.4		
• Permit Requirements and Exceptions	.5		
• Application for Permits and Information Collection	.6		
• Notification to Indian Tribes of Possible Harm to, or Destruction of, Sites on Public Lands Having Religious or Cultural Importance	.7		
• Relationship to Section 106 of the National Historic Preservation Act	.12		
• Custody of Archeological Resources	.13		
• Determination of Archeological or Commercial Value and Cost of Restoration and Repair	.14		
• Assessment of Civil Penalties	.15		
• Civil Penalty Amounts	.16		
• Other Penalties and Rewards	.17		
• Confidentiality of Archeological Resource Information	.18		
• Report36 CFR 296	.19		

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment
NATURAL RESOURCE AND WILDLIFE PROTECTION LAWS			
ARCHEOLOGICAL AND HISTORICAL PRESERVATION ACT (AHPA) [16 USC 469a-1]			
Notification and Request for Preservation of Data Survey of Sites; Preservation of Data; Compensation	16 USC 469a-1(a) 16 USC 469a-1(b)	L	Differs from NHPA in that it encompasses a broader scope of resources than those listed on the National Register and requires only preservation of the data (including analysis and publication).
SAFE DRINKING WATER ACT (SDWA) [42 USC 300f et. seq.]			
COLORADO PRIMARY DRINKING WATER REGULATIONS	5 CCR 1003-1,	C	Refer to RFCA Attachment 5 for surface water action levels and standards and groundwater action levels.
MAXIMUM CONTAMINANT LEVEL GOALS	40 CFR 141	C	Refer to RFCA Attachment 5 for surface water action levels and standards and groundwater action levels.

Requirement	Citation	Type	Comment
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]			
The State of Colorado is authorized to administer portions of the hazardous waste management program (e.g., RCRA) to regulate the generation, treatment, storage, and disposal of hazardous waste within Colorado. As such, the Colorado regulations that are more stringent than the federal counterparts would be applicable to the management of hazardous waste. These regulations may also be relevant and appropriate in situations where a remediation waste is "sufficiently similar" to a RCRA-listed waste (e.g., waste which was generated and disposed of prior to the effective date of regulation) or when the proposed remedial action is similar to a RCRA-regulated activity and would be appropriate to ensure that the activity is protective of human health and the environment. Although the Colorado hazardous waste management regulations are similar to the federal requirements, both the federal and state regulatory citations are provided for reference purposes and to denote that both federal and state requirements were considered in establishing the identifying the ARAR requirement adopted for the remediation of the RFETS. Only substantive portions of the regulations are required under CERCLA actions for onsite activities. The State has not verified that these are the only substantive standards. The final determination is predicated upon an analysis for a specific action.			
SOLID WASTE DISPOSAL SITES AND FACILITIES • Definitions	6 CCR 1007-2 Section 1.2	A	"Recyclable materials" means any type of discarded or waste material that is not regulated under Section 25-8-205(1)(e), C.R.S., and can be reused, remanufactured, reclaimed, or recycled
IDENTIFICATION AND LISTING OF HAZARDOUS WASTES	6 CCR 1007-3, 261 [40 CFR 261]	A	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]				
GENERATOR STANDARDS	6 CCR 1007-3 Part 262 (40 CFR Part 262)			
• Hazardous waste determinations	.11	A/C	Persons who generate solid wastes are required to determine if the wastes are hazardous according to 6 CCR 1007-3 Parts 261, 267, 279 [40 CFR Parts 261, 266, and 279]	
• Hazardous waste accumulation areas	.34 (a)(1)(i),(ii),(iv, excluding A & B); (a)(3); (a)(4); (c)(1)	A	Persons who accumulate hazardous waste in containers or tanks must manage the waste in a manner that protects human health and the environment.	262.40-.43
GENERAL FACILITY STANDARDS	6 CCR 1007-3 Part 264, Subpart B [40 CFR Part 264, Subpart B]			
• Waste Analysis	.13 (a)	A	The owner/operator of a facility that stores, treats, or disposes of waste must verify the waste has been characterized adequately.	264.13(b)
• Security	.14	A/L	The owner/operator of a facility must prevent unauthorized access.	
• General Inspection Requirements	.15 (a), (c)	A/L	The owner/operator of a facility must inspect for malfunctions, deteriorations, and releases, and must remedy deficiencies.	264.15 (d)

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]				
• Personnel Training Requirements	.16 (a), (b), (c)	A/C	Personnel must be trained.	264.16(d), (e) 264.17(c)
• General Requirements for Ignitable, Reactive or Incompatible Wastes	.17 (a), (b)	A/C	Wastes will be managed to prevent accidental ignition or reaction of ignitable or reactive waste, or the mixing of incompatible waste.	264.18
PREPAREDNESS AND PREVENTION	6 CCR 1007-3 Part 264, Subpart C [40 CFR 264, Subpart C]			
• Design and Operation of a Facility	.31	A/C	Design facilities to minimize the potential for fire, explosion or release of hazardous waste.	
• Required Equipment	.32	A/C	Facilities must be equipped with specified equipment to mitigate incidents, should they occur.	
• Testing and Maintenance of Equipment	.33	A/C	Equipment must be maintained.	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]				
• Access to Communications or Alarm System	.34	A/L	Employees must have access to emergency communications when managing hazardous waste.	
• Required Aisle Space	.35	A	Aisle space must be maintained to allow unobstructed access to emergency personnel and emergency equipment.	
• Arrangement with Local Authorities	.37	A/L	The owner/operator must make arrangements with specified local emergency personnel.	
CONTINGENCY PLAN AND EMERGENCY PROCEDURES	6 CCR 1007-3 Part 264, Subpart D [40 CFR Part 264, Subpart D]			
• Purpose and Implementation	.51 (b)	A/C	RFETS Emergency Response Plan incorporates the substantive requirements of the Contingency Plan in the Site's Part B Hazardous Waste Permit. Emergencies such as fire, explosion, or release of hazardous waste must be mitigated immediately.	
• Emergency Coordinator	.55	A	A designated employee is responsible for coordinating emergency response actions.	
• Emergency Procedures	.56 (a-i)	A		
MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING	6 CCR 1007-3 Part 264, Subpart E [40 CFR Part 264, Subpart E]			
		A	Operating Record	264.73
		A	Recordkeeping	264.74

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]				
GROUND-WATER MONITORING	6 CCR 1007-3 Part 264, Subpart F [40 CFR Part 264, Subpart F]	A	The substantive portions of the groundwater monitoring ARARs for each CERCLA action will be incorporated into the Integrated Monitoring Plan (IMP)	
CLOSURE AND POST-CLOSURE	6 CCR 1007-3 Part 264, Subpart G [40 CFR Part 264, Subpart G]			
• Closure Performance Standards	.111	A	The owner/operator must close the facility in a manner that protects human health and the environment.	
• Disposal or Decontamination of Equipment, Structures, or Soils	.114	A/C	All hazardous wastes and residues of hazardous waste must be disposed or decontaminated.	
• Post-Closure Care and Use of Property	.117	A/C	Human health and the environment must be protected after closure is complete if hazardous waste remains at the facility.	
USE AND MANAGEMENT OF CONTAINERS	6 CCR 1007-3 Part 264, Subpart I [40 CFR Part 264, Subpart I]			
• Condition of Containers	.171	A	Containers must be maintained in good condition.	
• Compatibility of Waste in Containers	.172	A	Wastes must be compatible with containers.	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]				
• Management of Containers	.173	A	Containers must be closed except when adding or removing waste.	
• Inspections	.174	A	Containers must be inspected weekly.	
• Containment o System Design and Operation o Ignitable and Reactive Wastes o Incompatible Wastes	 .175 .176 .177	 A A A		
• Closure	.178	A	Hazardous wastes and residues of hazardous waste must be removed or decontaminated from the unit and soils.	
• Air Emission Standards	.179	A/C	Hazardous wastes must be managed in accordance with AA, BB, CC, as appropriate.	
TANK SYSTEMS	6 CCR 1007-3 Part 264, Subpart J [40 CFR Part 264, Subpart J]			
• Design and Installation of New Tank Systems or Components	.192 (a-f)	A	Tank systems must be designed to maintain their integrity when storing or treating hazardous waste.	
• Containment and Detection of Releases	.193 (a)(i)(1,2,3,5)	A	Secondary containment must be designed to contain and detect any releases from the tank system.	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]				
• General Operating Requirements	.194 (a-c)	A	Tank systems must be maintained in good condition to prevent releases to the environment.	
• Inspections	.195 (b,c)	A	Inspections are conducted to identify any tank system integrity concern.	
• Response to Leaks or Spills and Disposition of Leaking or Unfit-for-Use Tank Systems	.196 (a-c),(e)	A		
• Closure and Post-Closure Care	.197 (a,b)	A	During closure, hazardous waste and hazardous waste residues must be removed from the tank system.	
• Special Requirements for Ignitable and Reactive Wastes	.198	A/C	Ignitable or reactive waste must be managed as specified in this section.	
• Special Requirements for Incompatible Waste	.199	A/C	Incompatible waste must not be introduced into a tank system unless 264.17(b) is complied with.	
• Air Emission Standards	.200	A/C	All hazardous waste shall be managed in accordance with AA, BB, CC	
CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS	6 CCR 1007-3 Part 264, Subpart S [40 CFR Part 264, Subpart S]			

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]				
• Temporary Units	.553 (a-c)	A	Temporary units allow flexibility. Justification for alternative compliance must be included in the CERCLA/RFCA decision document	
MISCELLANEOUS UNITS	6 CCR 1007-3 Part 264, Subpart X [40 CFR Part 264, Subpart X]			
Environmental Performance Standards	.601	A	Miscellaneous units must be designed, constructed, operated and maintained in a manner that protects groundwater, surface water, wetlands, soils, and air.	
• Monitoring, Analysis, Inspection, Response, Reporting, and Corrective Action	.602	A	Miscellaneous units must be managed to ensure compliance with 264.15 (inspections), 264.33 (testing and monitoring), 264.101 (corrective action for releases).	
• Post Closure Care	.603	A	Miscellaneous units that are disposal units must meet Post Closure Care requirements.	
AIR EMISSION STANDARDS FOR TANKS, SURFACE IMPOUNDMENTS, AND CONTAINERS	6 CCR 1007-3 Part 264, Subpart CC [40 CFR Part 264, Subpart CC]			
• Standards: General	.1082	A	Air emission standards must be incorporated into the design of tanks, surface impoundments, and container facilities that store or treat hazardous waste with organic concentrations equal to or greater than 10 ppm (by weight).	
• Waste Determination Procedures	.1083	A		
• Standards: Tanks	.1084	A		
• Standards: Surface Impoundments	.1085	A		
• Standards: Containers	.1086	A		

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]				
• Standards: Closed-Vent Systems and Control Devices	.1087	A		
• Inspection and Monitoring Requirements	.1088	A		.1089
CONTAINMENT BUILDINGS	6 CCR 1007-3 Part 264, Subpart DD [40 CFR Part 264, Subpart DD]			
• Design and Operating Standards	.1101(a); (b); (c)(1, 3 (excluding i-iii), and 4); (d); (e)	A	Containment buildings must be designed and operated to prevent releases to the environment.	
• Closure and Post-Closure Care	.1102	A		
LAND DISPOSAL RESTRICTIONS	6 CCR 1007-3 Part 268 [40 CFR Part 268]			
• Dilution Prohibited as a Substitute for Treatment	.3	A	LDR determinations must be completed for hazardous wastes generated.	
• LDR Determination (Determination if Hazardous Waste Meets the LDR Treatment Standards)	.7	A	Land disposal restrictions apply primarily to the off-site disposal actions proposed as part of the remedial activity.	
• Special Rules for Wastes that Exhibit a Characteristic	.9 (a-c)	A		

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]				
MANAGEMENT OF UNIVERSAL WASTE	6 CCR 1007-3 Part 273 [40 CFR Part 273]			Subpart B Subpart C
• Prohibitions	.11, .31	A	A handler of universal waste is prohibited from disposing, diluting, or treating universal waste, except during responses to releases.	
• Waste Management	.13, .33	A		
• Labeling and Marking	.14, .34	A	Universal waste and the associated accumulation areas must be labeled and marked as defined in this section.	
• Employee Training	.16, .36	A	Employees must be trained about waste management requirements and on emergency procedures according to their responsibilities.	
• Response to Releases	.17, .37	A	Universal waste handlers must contain releases of universal wastes, and must manage the resulting waste, as appropriate, in accordance with the hazardous waste regulations.	

Requirement	Citation	Type	Comment	BMP
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]				
STANDARDS FOR THE MANAGEMENT OF USED OIL	6 CCR 1007-3 Part 279 [40 CFR Part 279]			
• Used Oil Specifications	.11	A	Used oil burned for energy recovery must meet the specifications of this section	
• Prohibitions	.12	A	Used oil must not be stored in surface impoundments, be used as a dust suppressant, or be burned in unapproved units	
• Hazardous Waste Mixing	.21	A	Used oil must be characterized and managed in accordance with 269.10 and this section.	
• Used Oil Storage	.22	A.	Used oil must be managed in containers or tanks in a manner that protects human health and the environment. Releases must be cleaned up and steps must be taken to prevent re-occurrence.	
• On-Site Burning in Space Heaters	.23	A	Used oil may be used as fuel for space heaters if the gases are vented to ambient air, and the maximum capacity of the space heater is not more than 0.5 million Btu per hour.	
SOIL REMEDIATION POLICY DOCUMENT				
• Colorado Soil Remediation Objectives Policy Document	Published by CDPHE in December, 1997	TBC	Cost effective, site-specific risk-based approach to establishing soil remediation objectives. Would be considered in manner compatible with ALF and RFCA Attachment 10.	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.]				
SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]				
UNDERGROUND STORAGE TANKS	7 CCR 1101-14 [40 CFR Part 280]			
• Performance Standards for New USTs	3.20; 4.30-4.33;	A	USTs must be designed, maintained, and operated to prevent releases from the tank systems to the environment.	
• General Operating Requirements	5.40-5.44;]	A		
• Release Detection	6.53;	A	Releases that impact soils or groundwater will be identified as a PAC, will be added to the ER Ranking List, and will be incorporated into the integrated Site remediation program.	
• Clean-Up of Spills and Overfills	7.61(b),(c);	A	Coordination efforts within CDPHE and the Department of Labor & Employment, Oil Inspection Section will be accomplished through communication with the LRA.	
• Initial Response to Spills and Overfills	7.62(a);	A		
• Initial Abatement Measures	7.63(a);	A		
• Initial Site Characterization	7.64(a),(b),(c);	A		
• Free Product Removal	7.65(a);	A		
• Investigations for Soil and Groundwater Clean-Up		A		

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
SOLID WASTE DISPOSAL ACT (aka: Resource Conservation and Recovery Act) [42 USC § 6901 et. seq.] SUBTITLE C: HAZARDOUS WASTE MANAGEMENT [Colorado Hazardous Waste Act (CRS § § 25-15-101 to -217)]				
• Temporary Closure	8.70(a),(b);	A		
• Permanent Closure and Changes-in-Service	8.71(b),(c);	A		
• Assessing the Site at Closure or Change-in-Service	8.72;	A		
• Applicability to Previously Closed UST Systems	8.73;	A		8.74

Requirement	Citation	Type	Comment	BMP
Colorado Revised Statutes (CRS) Title 8 Article 20 Parts 7 and 2; Title 18 Article 25 Part 1				
PERFORMANCE STANDARDS FOR TANKS	7 CCR 1101-14 Part 3			
• Design and Construction of Tanks	AST.31.2	A	ASTs must be designed, maintained, and operated to prevent releases to the environment.	
• Location and Installation of Outside Aboveground Tanks	AST.31.3	A		
• Location and Installation of Aboveground Storage Tanks in Vaults	AST.31.4	A		
• Normal Venting for Aboveground Tanks	AST.31.5	A		
• Emergency Relief Venting for Fire Exposure for Aboveground Tanks	AST.31.6	A		
• Vent Piping for Aboveground Tanks	AST.31.7	A		
• Tank Openings other than Vents for Aboveground Tanks	AST.31.8	A		
• Installation of Tanks Inside of Buildings	AST.31.9	A		
• Standards for Piping, Valves, and Fittings	AST.32	A		

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
Colorado Revised Statutes (CRS) Title 8 Article 20 Parts 7 and 2; Title 18 Article 25 Part 1				
OPERATING REQUIREMENTS	7 CCR 1101-14 Part 4			
• Collision Protection	AST.40	A		
• Spill and Overfill Control (excluding reporting requirements), Remote Impounding, Secondary Containment	AST.41 (excluding reporting part of AST.41.1(e))	A		
• Operation and Maintenance of Corrosion Protection	AST.42	A		
• Compatibility Requirements for all Tanks	AST.43	A		
• Static Protection for all Tanks	AST.44	A		
• Repairs Allowed (excluding requirement for approvals and inspections by State Oil Inspector)	AST.45 (excluding AST.45(b)(4))	A		
• Out-of-Service, Closure or Change-in-Service	AST.46(c)(1-5)	A		AST.46(a), (b), (c, 8-10), (b) Records and documentation

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
Colorado Revised Statutes (CRS) Title 8 Article 20 Parts 7 and 2; Title 18 Article 25 Part 1				
RELEASE DETECTION	7 CCR 1101-14 Part 5 AST.5	A		AST.52 Records of Inspections
RELEASE RESPONSE AND CORRECTIVE ACTION	7 CCR 1101-14 Part 7		Releases that impact soils or groundwater will be identified as a PAC, will be added to the ER Ranking List, and will be incorporated into the integrated Site remediation program.	
• Initial Response	AST.72(b), (c)	A		
• Initial Abatement Measures	AST.73	A	Coordination efforts within CDPHE and the Department of Labor & Employment, Oil Inspection Section will be accomplished through communication with the LRA.	
• Repair or Closure Required	AST.74	A		
OIL POLLUTION PREVENTION	7 CCR 1101-14 Part 11			
• Oil Pollution Prevention: Oil Pollution Prevention SPCC Plan Requirements	AST.112.7(c), (d), (e, 1-2, 4-5)	A	A SPCC plan would not be specifically required as an ARAR; however, the substantive requirements that are incorporated into and implemented as part of the SPCC plan would be required as an ARAR. (e.g., Prediction of the direction, rate and flow of a release from a tank system need not be included in a plan; however, it must be known by the facility and be available to emergency responders at the facility.)	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
Colorado Revised Statutes (CRS) Title 8 Article 20 Parts 7 and 2; Title 18 Article 25 Part 1				
TOXIC SUBSTANCES CONTROL ACT (TSCA) [15 USC 2601 et seq.] Relating to PCBs				
PCB USE AUTHORIZATIONS	40 CFR 761.30	A	Lists authorized uses and use restrictions for PCBs	
MARKING REQUIREMENTS	40 CFR 761.40 and .45	A	Labeling of PCBs and PCB storage Areas	
DISPOSAL REQUIREMENTS		A		
• Applicability	761.50		General PCB Disposal Requirements	
• Disposal Requirements	761.60		Disposal Requirements	
• PCB Remediation Waste	761.61			
• PCB Bulk Product Waste	761.62		Pursuant to a letter from Kerrigan Clough to Joe Legare, Approval of Risk-Based Approach for PCB-Based Painted Concrete, November 2001, concrete painted with PCB-based paints may be left in place in the basements of demolished buildings, and concrete rubble containing PCB-based paints may be stored onsite and used as backfill.	
• Disposal of R&D and Chemical Analyses wastes	761.64			
STORAGE REQUIREMENTS FOR PCBs • Facility Criteria • Temporary Storage • Inspections • Container Specifications • PCB radioactive waste • Marking • Laboratory Sample Exemption from Manifesting	40 CFR 761.65	A		
INCINERATION • Liquid PCBs • Non-Liquid PCBs	40 CFR 761.70	A	These regulations would only be ARARs for the construction and operation of an onsite PCB incinerator, it is envisioned that this will not occur	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
Colorado Revised Statutes (CRS) Title 8 Article 20 Parts 7 and 2; Title 18 Article 25 Part 1				
HIGH EFFICIENCY BOILERS • Operating requirements	40 CFR 761.71	A	These regulations would only be ARARs for onsite burning PCB mineral oil dielectric fluid in a boiler, it is envisioned that this will not occur	
SCRAP METAL RECOVERY OVENS AND SMELTERS • Operating Requirements	40 CFR 761.72	A	These regulations would only be ARARs for onsite scrap metal recovery or smelting; it is envisioned that this will not occur	
CHEMICAL WASTE LANDFILLS • Design and Operating Requirements	40 CFR 761.75	A	These regulations would only be ARARs for the construction and operation of an onsite PCB disposal cell; it is envisioned that this will not occur	
TSCA COORDINATED APPROVAL	40 CFR 761.77	A	Institutionalizes EPA approval of PCB activities under TSCA when activities are being conducted under another waste management permit, or other decision document issued by EPA or pursuant to a State PCB waste management program	
DECONTAMINATION STANDARDS AND PROCEDURES • Self-Implementing Decontamination • Measurement-Based Decontamination	40 CFR 761.79	A		
PCB SPILL CLEANUP • Requirements for PCB Spill Cleanup	40 CFR Subpart G	TBC	40 CFR 761 Subpart G is entitled PCB Spill Cleanup Policy and thus many of the sections, specifically for spills after May 4, 1987 are "To Be Considered"	
Cleanup site characterization sampling for PCB remediation waste	40 CFR Subpart N	A	Characterization requirements for cleanup of PCB remediation waste	
Sampling to verify completion of self-implementing cleanup and on-site disposal of	40 CFR Subpart O	A	Not ARAR unless conducting a self implementing cleanup of PCB remediation waste	

A - Action-Specific ARAR; C - Chemical-Specific ARAR; L - Location-Specific ARAR; TBC - To Be Considered

Requirement	Citation	Type	Comment	BMP
Colorado Revised Statutes (CRS) Title 8 Article 20 Parts 7 and 2; Title 18 Article 25 Part 1				
bulk PCB remediation waste and porous surfaces				
Sampling non-porous surfaces for measurement-based use, reuse, and on-site or off-site disposal under 761361(a)(6) and determination under 761.79(b(3)	40 CFR Subpart P	A		
Self-implementing alternative dextraction and chemical analysis procedures for non-liquid PCB remediation waste samples	40 CFR Subpart Q	A	Applicable procedures when using alternatives to required analytical methodology	
Sampling non-liquid, non-metal PCB bulk product waste for purposes of characterization for PCB disposal in accordance with 761.62, and sampling PCB remediation waste destined for off-site disposal, in accordance with 761.61	40 CFR Subpart R	A	Characterization requirements for PCB bulk product waste and PCB remediation waste when characterization for disposal is required	
Double wash/rinse method for decontaminating non-porous surfaces	40 CFR Subpart S	A	Referenced procedure from 761.79	

Appendix M

ACTION LEVELS FOR RADIONUCLIDES IN SOILS

This IGD Appendix originally contained the technical basis for the development of the enforceable action levels for radionuclides in soil as defined in Attachment 5 to the Rocky Flats Cleanup Agreement. This Appendix has been superceded. For the latest technical basis for the development of radionuclide soil action levels see *Results of the Interagency Review of Radionuclide Soil Action Levels*, September 20, 2002, which is online at www.rfets.gov.

1.0 INTRODUCTION

DOE first developed human health risk-based *Preliminary Remediation Goals (PRGs) in* 1995 to establish initial site-wide cleanup targets for contaminants for each environmental medium. The PRGs have been updated regularly to conform with the evolving site conceptual model and future land use. The latest update is based on the work of the Radionuclide Soil Action Level Workgroup ([RSALW], Task 3 Report and Appendices: Calculation of Surface Radionuclide Soil Action Levels for Plutonium, Americium, and Uranium, September 30, 2002). The human health PRGs are currently used in RFCA Attachment 5 as action levels for the following mediums:

- Groundwater Action Levels: Human health PRGs based on the residential groundwater ingestion scenario are used where no Maximum Contaminant Level (MCL) is available from EPA; and
- Soil Action Levels: For non-radionuclides, human health PRGs based on the wildlife refuge worker scenario are used where no applicable or relevant and appropriate requirement is available.

DOE, EPA, and CDPHE, with support from the U.S. Fish and Wildlife Service, developed ecological PRGs in 2002. Ecological receptor PRGs were only calculated for analytes originally identified by the 2002 Ecological Risk Working Group as being of site-wide potential concern to ecological receptors. The ecological receptor PRGs are currently used in RFCA Attachment 5 as action levels for soil.

Human health and ecological PRGs are reviewed and updated, as necessary, on an annual basis.

2.0 HUMAN HEALTH

2.1 Exposure Pathways

In order to standardize the risk-based PRGs across RFETS, programmatic exposure pathways and receptors were established. The following tables identify the receptors and exposure pathways selected for each environmental medium:

- Table 1: Wildlife Refuge Worker Exposure Scenario
- Table 2: Rural Resident Groundwater Exposure Scenario[WC1]

Standard calculation methods given in Risk Assessment Guidance for Superfund (RAGS), part B (USEPA, 1991) were used in developing risk-based PRG pathways where available. Most of the exposure factors for the PRGs were developed and agreed upon by the RSALW and are presented and documented in the Task 3 Report (September 30, 2002).

2.2 Methodology, Equations, and Assumptions

Risk-based PRGs were developed for the Target Analyte Listof metals and organics for the wildlife refuge worker exposure scenario; and the residential groundwater exposure scenario. Separate risk-based equations were developed to account for the carcinogenic and/or noncarcinogenic effects of the contaminant. Risk-based PRGs for carcinogens were calculated by setting the carcinogenic target risk level at 1E-05 and 1E-06. A target risk level of 10-5 means that an individual has a ten-in-one million probability of developing excess cancer over a lifetime as a result of exposure to a specific contaminant; a target risk level of 10-6 means that an individual has a one-in-one million probability of developing excess cancer over a lifetime as a result of exposure to a specific contaminant. This risk is in addition to the probability of an individual developing cancer from some other factors including environmental pollution not related to the site, heredity, or lifestyle.

Similarly, risk-based PRGs for toxicants (noncarcinogens) were calculated by setting the hazard quotient equal to 1 and 0.1 for each contaminant. A hazard quotient is the ratio of a single substance exposure level of a chemical contaminant over a specified period to the reference dose for the chemical. The reference dose represents an estimate of an exposure level for the human population, including sensitive subpopulations, that is likely to be without appreciable deleterious effects during a lifetime. When both carcinogenic and noncarcinogenic toxicity information was available both carcinogenic and noncarcinogenic risk-based concentrations were calculated and the more restrictive value was selected as the risk-based PRG.

The risk-based PRG exposure scenarios and equations provided in Tables 1 and 2 include all of the exposure pathways identified for the exposure scenario; separate risk-based PRGs were not calculated for each exposure pathway.

2.3 Chemical Toxicity Information

The chemical-specific toxicity values used for the calculation of the risk-based PRGs are presented in Table 3. Toxicity information used to calculate the PRGs included the carcinogenic slope factor or unit risk, and for noncarcinogenic effects, the reference dose (RfD) and reference concentration (RfC). Toxicity values were obtained from the latest information in EPA's Integrated Risk Information System (IRIS) files, the EPA Health Effects Assessment Summary Tables (HEAST), and the EPA, Region 3, PRG tables. Values for polycyclic aromatic hydrocarbons were calculated using EPA's Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons.

3.0 ECOLOGICAL RECEPTORS

3.1 Exposure Pathways and Receptors

The RFETS environment as it relates to ecological risk assessment is described in detail in *Final Ecological Risk Assessment Methodology: Sitewide Conceptual Model* (DOE 1996a). Primary exposure pathways for mammalian and avian receptors to site contaminants of

concern (COCs) are ingestion of COCs in food, ingestion of soils, and external exposure to penetrating radiation present in soils (Table 4). Secondary pathways include dermal contact, particulate inhalation, and inhalation of volatile organic released into burrows. Inhalation and dermal contact are considered minor compared to the ingestion and external exposure pathways.

The following receptors were evaluated as representative of site ecological groups to quantify PRGs:

- Fossorial (burrowing) small mammal (Prairie Dog)
- Fossorial (burrowing) small mammal (Preble's Meadow Jumping Mouse)
- Herbivorous small mammal (Deer Mouse)
- Insectivorous small mammal (Deer Mouse)
- Small ground-feeding birds (Mourning Dove)
- Avian Predator (American Kestrel)

The general exposure scenario assumed for all receptors included direct ingestion of soil, incidental ingestion of soil during feeding and burrowing, and ingestion of prey items. PRGs were also developed for external exposure to radionuclides, but these resulting soil concentrations were much higher than ingestion based PRGs. Radionuclide PRGs were based on the methodology developed by Higley and Kuperman (1995) for RFETS.

3.2 Methodology, Equations, and Assumptions

Risk-based PRGs were developed for a list of COCs identified by the ecological risk assessment working group. EPA's Eco Soil Screening Levels (EcoSSLs) process was used as a general guidance to develop the PRGs (EPA 2000). Extensive use was made of existing databases and compilations of ecotoxicity information, especially those from other DOE facilities such as Oak Ridge National Laboratories and Los Alamos National Laboratories.

The EcoSSL document provides general equations and procedures for developing PRGs from toxicological research, receptor-specific exposure parameters such as food ingestion rates, diet, and bioaccumulation factors (BAFs) that describe uptake of COCs from soils into forage or prey species (Table 5). Intake from multiple sources of incidental soil intake such as plant ingestion, prey ingestion etc. are summed to estimate the total intake from this exposure pathway. The general equation to calculate PRGs is also presented in Table 5.

Risk-based PRGs were then calculated by applying a target hazard quotient (HQ) equal to 1.0 for each COC and receptor. PRGs corresponding to both the No Observed Adverse Effects Levels (NOAEL) and Lowest Observed Adverse Effects Levels (LOAEL) were calculated. However, only the LOAEL concentrations are used for the RFCA PRGs with the exception of those areas deemed to be potential Preble's Meadow Jumping Mouse (PMJM) habitat.

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Given the special status of this species, the ecological risk assessment working group determined that the NOAEL TRV would be used for the PMJM receptor in the areas in which the receptor may reside. [JMA2]Calculated PRGs represent soil concentrations below which no risk to wildlife populations would be predicted following exposure of specific ecological receptor species to contaminants present in soils and food.

3.3 Chemical Toxicity Information

Chemical-specific Toxicity Reference Values (TRVs) are presented in Table 6. TRVs were compiled for mammalian and avian species from pre-existing data review s, guidance documents, and peer reviewed literature sources. Rodent studies were preferred for mammalian data, since the two surrogate wildlife mammalian species are rodents. Bird studies were used as sources of TRVs for avian receptors. No extrapolation between bird and mammalian toxicity information was used to calculate the PRGs.

Available NOAELs and LOAELs for site soil COCs were chosen based on the following criteria:

- Oral exposure studies from which a dose could be determined.
- Generally, only chronic or subchronic studies were used. However, some acute studies where reproductive and developmental endpoints were assessed during discrete, critical life stages.
- Growth and mortality endpoints.

Following initial compilation of TRVs presented, primary study papers were obtained, when possible. Database TRV values were then confirmed by review of the original study documents. It should be noted that no adjustments of the original TRVs were made for study duration. Nor was an analysis of study "quality" conducted to weight the TRVs according to EcoSSL guidance.

NOAEL and LOAEL TRVs were compiled from the database of preliminary TRVs discussed above. Average TRVs were calculated by obtaining the arithmetic mean of several groups of endpoints. Individual average TRVs were then calculated for growth, reproductive, and mortality endpoints for those COCs where available. In addition, an average TRV was calculated for each COC using a compilation of all sub-lethal endpoints available from the literature search and databases. These TRVs were then used to quantify final PRGs.

Bioaccumulation Factors (BAFs) (Table 7) were identified and calculated for use in the PRG development process. As with the TRV selection process, the procedures used in the selection of BAFs closely corresponded to those developed in the EcoSSL guidance (USEPA 2000). BAFs are either simple ratios of COC concentrations between biota and soils, or based on quantitative relationships such as linear, logarithmic, or exponential equations.

BAFs were calculated or identified for the following pathways:

- Soil to Plant
- Soil to Terrestrial Invertebrate
- Soil to Small Mammal
- Soil to Bird

BAFs were obtained from several publicly available databases, peer reviewed literature, and from approved ERAs at other sites that are applicable to the CSM and data uses for RFETS.

4.0 RFETS PRGS

Tables 8 and 9 are a summary of the human health PRGs for each exposure scenario.

Table 9 is a summary of the ecological PRGs for each receptor.

Table 1. Wildlife Refuge Worker Exposure Scenario

The Wildlife Refuge Worker Surface Soil Exposure Scenario consists of the following pathways: ingestion of surface soil, outdoor inhalation of dust (inhalation of volatiles is not assessed(WC3)), and dermal contact for nonradionuclides for a wildlife refuge worker working at the site for an average of 18.7 years, spending 50% of this time outdoors. Exposures for radionuclides are not assessed in this spreadsheet (refer to the RSALS Task 3 Report and Appendices [Sept. 2002]). The worker is assessed as spending all of their time on the most contaminated areas of the site, and performs soil-contact intensive activities. This scenario includes all complete and significant exposure pathways and parameter assumptions that were evaluated in the Task 3 Report and Appendices, as well as the dermal pathway. Calculations in this spreadsheet are performed deterministically.

Exposure Parameter	Variable	Unit	Point Estimate*	Source
General Assumptions				
Target hazard index - 1	THI-1	--	0.1	EPA, 1991a
Target excess lifetime cancer risk - 1	TR-1	--	1E-06	EPA, 1991a
Target hazard index - 2	THI-2	--	1	EPA, 1991a
Target excess lifetime cancer risk - 2	TR-2	--	1E-05	EPA, 1991a
Adult body weight	BW_A	kg	70	EPA, 1991b
Wildlife Refuge Worker Exposure Scenario Assumptions				
Exposure duration	ED_WRW	yr	18.7	RSALS, 2002,
Exposure frequency	EF_WRW	day/yr	250	RSALS, 2002,
Exposure time-outdoors	ET_WWR	hr/day	4	RSALS, 2002,
Averaging time - noncarcinogenic	AT_NC	yr	18.7	RSALs, 2002,
Averaging time - carcinogenic	AT_C	yr	70	EPA, 1991b
Exposure time fraction, outdoor	Eto_WRW	--	1	RSALs, 2002
Exposure time fraction, indoor	Eti_WRW	--	0	RSALs, 2002
Hourly inhalation rate adult worker	HIR_A_WRW	m3/hr	1.3	RSALs, 2002
Site-specific PEF based on ML	PEF	m3/kg	14925373	RSALs, 2002
Soil Ingestion Rate	SIR_A_WRW	mg/day	100	RSALs, 2002
Skin-soil adherence factor	AF_A_WRW	mg/cm2-event	0.117	EPA, 2001
Event frequency	EV	events/d	1	EPA, 2001
Skin surface area	SA_A_WRW	cm2	3300.00	EPA, 2001
Dermal absorption fraction	ABS	--	chemical-specific	EPA, 2001
Toxicity Values				
Oral reference dose	RfDo	mg/kg-day	chemical-specific	IRIS, HEAST or NCEA
Oral cancer slope factor	CSFo	$(mg/kg\text{-}day)^{-1}$	chemical-specific	IRIS, HEAST or NCEA
Inhalation reference dose	RfDi	mg/kg-day	chemical-specific	IRIS, HEAST or NCEA
Inhalation cancer slope factor	CSFi	(mg/kg-day)-1	chemical-specific	IRIS, HEAST or NCEA

Sources:

EPA, 1991a = U.S. Environmental Protection Agency. 1991. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual, Part B, Development of Risk-Based Preliminary Remediation Goals. Interim. Office of Emergency and Remedial Response, Washington, D.C. Publication 9285.7-01B. December.

EPA, 1991b = U.S. Environmental Protection Agency. 1991. Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.6-03. March 25.

EPA, 2000 = U.S. Environmental Protection Agency. 2000. Soil Screening Guidance for Radionuclides: Technical Background Document. Office of Radiation and Indoor Air, Washington, D.C. Publication EPA/540-R-00-006. October, 2000.

EPA, 2000b = U.S. Environmental Protection Agency. Risk Assessment Guidance for Superfund Vol. I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Interim Guidance. Office of Emergency and Remedial Response, Washington, D.C.
EPA, 2001 = U.S. Environmental Protection Agency. 2001. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, Peer Review Draft. Office of Solid Waste and Emergency Response, Washington, D.C. OSWER 9355.4-24. March.
RSAL 2002= U.S. DOE, U.S. EPA and CDPHE, 2002. Task 3 Report and Appendices: Calculation of Surface Radionuclide Soil Action Levels for Plutonium, Americium, and Uranium, September 30.

Equations used for the 2002 WLRW PRG spreadsheets:

Wildlife Refuge Worker Surface Soil Exposure Scenario

Noncarcinogenic PRG = ((THI x AT_NC(y) x 365(d/y)) / ((SIR_A_WRW(mg/d) x EF_WRW(d/y) x ED_WRW(y) x 10^{-6}(kg/mg) x 1/RfD$_o$(mg/kgd) x 1/BW_A(kg)) +
(HR_A_WRW(m^3/d) x EF_WRW(d/y) x ED_WRW(y) x ET_SS_WRW(hr/d) x 1/PEF*(m^3/kg) x 1/RfD$_i$(mg/kgd) x 1/BW_A(kg) x (ETo_WRW +(ETI_WRW x DFi))) +
(SA_A_WRW(cm^2) x AF_A_WRW(mg/cm^2event) x EF_WRW(d/y) x ED_WRW(y) x ABS x EV(events/d) x 1/RfD$_d$(mg/kgd) x 10^{-6}(kg/mg) x 1/BW_A(kg))

- for volatile compounds, substitute the chemical-specific volatilization factor, VF, found on the newChem&trans sheet for PEF

Carcinogenic PRG = ((TR x AT_C(y) x 365(d/y)) / (SIR_A_WRW(mg/d) x EF_WRW(d/y) x ED_WRW(y) x 10^{-6}(kg/mg) x CSF$_o$(risk/mg/kgd) x 1/BW_A(kg))
(HR_A_WRW(m^3/h) x EF_WRW(d/y) x ED_WRW(y) x ET_SS_WRW(hr/d) x 1/PEF*(m^3/kg) x CSF$_i$(risk/mg/kgd) x 1/BW_A(kg) x (ETo_WRW + (ETI_WRW x DFi)))
(AF_A_WRW(mg/cm^2 event) x SA_A_WRW(cm^2) x EF_WRW(d/y) x ED_WRW(y) x ABS x EV(events/d) x CSF$_d$(risk/mg/kgd) x 10^{-6}(kg/mg) x 1/BW_A(kg)))

- for volatile compounds, substitute the chemical-specific volatilization factor, VF, found on the newChem&trans sheet for PEF

Table 2. Rural Resident Groundwater Exposure Scenario

The Rural Residential Groundwater Exposure Scenario consists of the following pathway: ingestion of groundwater . Inhalation of volatiles is not considered. The resident ingests groundwater while living at the site for 30 years. It is assumed that the rural resident will live on a 5-acre ranchette, which would be part of a development. It is unlikely that shallow groundwater wouldbe ingested due to limitations in ability for the shallow aquifer to supply water in sufficient quantity. This scenario is for use in the development of the groundwater Action Levels.. Calculations in this spreadsheet are performed deterministically..

Exposure Parameter	Variable	Unit	Point Estimate*	Source
General Assumptions				
Target hazard index-1	THI-1	--	0.1	EPA, 1991a
Target excess lifetime cancer risk-1	TR-1	--	1E-06	EPA, 1991a
Target hazard index-2	THI-2	--	1	
Target excess lifetime cancer risk-2	TR-2	--	1E-05	
Adult body weight	BW_A	kg	70	EPA, 1991b
Child body weight	BW_C	kg	15	EPA, 1991b
Residential Exposure Scenario Assumptions				
Averaging time - noncarcinogenic	AT_NC	yr	30	EPA, 1991b
Averaging time - carcinogenic	AT_C	yr	70	EPA, 1991b
Exposure frequency	EF_RR	day/yr	350	EPA, 1991b
Exposure duration	ED_A	yr	30	EPA, 1991b
Daily water ingestion rate	IRw	L/day	2	EPA, 1991b
Toxicity Values				
Oral reference dose	RfDo	mg/kg-day	chemical-specific	IRIS, HEAST or NCEA
Oral cancer slope factor	CSFo	risk/(mg/kgd)	chemical-specific	IRIS, HEAST or NCEA
Inhalation reference dose	RfDi	mg/kg-day	chemical-specific	IRIS, HEAST or NCEA
Inhalation cancer slope factor	CSFi	risk/(mg/kgd)	chemical-specific	IRIS, HEAST or NCEA

EPA, 1991a = U.S. Environmental Protection Agency. 1991. Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual, Part B, Development of Risk-Based Preliminary Remediation Goals. Interim. Office of Emergency and Remedial Response, Washington, D.C. Publication 9285.7-01B. December.
EPA, 1991b = U.S. Environmental Protection Agency. 1991. Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Office of Solid Waste and Emergency Response, Washington, D.C. OSWER Directive 9285.6-03. March 25.

Residential Groundwater Exposure Scenario Equations

Noncarcinogenic PPRG = ((THI x AT_NC(y) x 365(d/y))/(IRw(L/d) x EF_RR(d/y) x ED_A(y) x 1/RfD_o(mg/kgd) x 1/BW_A(kg)))

Carcinogenic PRG = ((TR x AT_C(y) x 365(d/y))/(IRw(L/d) x EF_RR(d/y) x ED_A(y) x CSF_o(risk/mg/kgd) x (1/BW_A(kg)))

Table 3. Toxicity Values Used for the RFETS Human Health PRGs

Target Analyte List Chemical[1]		CAS Number	Oral RfD[2] (mg/kg-day)		Oral/Ingestion Slope Factor[2] (mg/kg-day)$^{-1}$		Inhal RfC (mg/m^3)		Inhalation Unit Risk (m^3/µg)		Inhalation RfD (mg/kg-day)		Inhalation Slope Factor (mg/kg-day)$^{-1}$
Acenaphthene	(V)	83-32-9	6.00E-02	I									
Acetone	(V)	67-64-1	1.00E-01	I									
Aldrin		309-00-2	3.00E-05	I	1.70E+01	I			4.90E-03	I			1.70E+01
Aluminum		7429-90-5	1.00E+00	E			3.50E-03	E			1.00E-03	E	
Anthracene	(V)	120-12-7	3.00E-01	I									
Antimony		7440-36-0	4.00E-04	I									
Aroclor 1016		12674-11-2	7.00E-05	I	7.00E-02	I			5.70E-04	I			7.00E-02
Aroclor 1221		11104-28-2			2.00E+00	Ia			1.14E-04	Ia			4.00E-01
Aroclor 1232		11141-16-5			2.00E+00	Ia			1.14E-04	Ia			4.00E-01
Aroclor 1242		53469-21-9			2.00E+00	Ia			1.14E-04	Ia			4.00E-01
Aroclor 1248		12672-29-6			2.00E+00	Ia			1.14E-04	Ia			4.00E-01
Aroclor 1254		11097-69-1	2.00E-05	I	2.00E+00	Ia			1.14E-04	Ia			4.00E-01
Aroclor 1260		11096-82-5			2.00E+00	Ia			1.14E-04	Ia			4.00E-01
Arsenic		7440-38-2	3.00E-04	I	1.50E+00	I			4.30E-03	I			1.51E+01
Barium		7440-39-3	7.00E-02	I			5.00E-04	A			1.43E-04	A	
Benzene	(V)	71-43-2	3.00E-03	E	5.50E-02	I	5.97E-03	E	7.80E-06	I	1.70E-03	E	2.90E-02
alpha-BHC		319-84-6			6.30E+00	I			1.80E-03	I			6.30E+00
beta-BHC		319-85-7			1.80E+00	I			5.30E-04	I			1.80E+00
delta-BHC		319-86-8											
gamma-BHC (Lindane)		58-89-9	3.00E-04	I	1.30E+00	H							
Benzo(a)anthracene		56-55-3			7.30E-01	E							
Benzo(a)pyrene		50-32-8			7.30E+00	I			8.60E-04	E			3.10E-01
Benzo(b)fluoranthene		205-99-2			7.30E-01	E							
Benzo(k)fluoranthene		207-08-9			7.30E-02	E							
Benzoic Acid (at pH 7)		65-85-0	4.00E+00	I									
Benzyl Alcohol		100-51-6	3.00E-01	H									
Beryllium		7440-41-7	2.00E-03	I			2.00E-05	I	2.40E-03	I	5.71E-06	I	8.40E+00
bis(2-chloroethyl)ether	(V)	111-44-4			1.10E+00	I			3.30E-04	I			1.10E+00
bis(2-chloroisopropyl)ether	(V)	39638-32-9	4.00E-02	I	7.00E-02	H			1.00E-05	H			3.50E-02
bis(2-ethylhexyl)phthalate		117-81-7	2.00E-02	I	1.40E-02	I							1.40E-02
Bromodichloromethane	(V)	75-27-4	2.00E-02	I	6.20E-02	I							

Table 3. Toxicity Values Used for the RFETS Human Health PRGs

Bromoform	(V)	75-25-2	2.00E-02	I	7.9E-03	I			1.10E-06	I			3.90E-03
Bromomethane (methyl bromide)	(V)	74-83-9	1.40E-03	I			5.00E-03	I			1.43E-03	I	
2-Butanone (methyl ethyl ketone)	(V)	78-93-3	6.00E-01	I			1.00E+00	I			2.86E-01	I	
Butylbenzylphthalate		85-68-7	2.00E-01	I									
Cadmium (food)		7440-43-9	1.00E-03	I			2.00E-04	E	1.80E-03	I	5.70E-05	E	6.30E+00
Cadmium (water)		7440-43-9	5.00E-04	I					1.80E-03	I	5.70E-05	E	6.30E+00
Carbon disulfide	(V)	75-15-0	1.00E-01	I			7.00E-01	I			2.00E-01	I	
Carbon tetrachloride	(V)	56-23-5	7.00E-04	I	1.30E-01	I	2.00E-03	E	1.50E-05	I	5.71E-04	E	5.30E-02
alpha-Chlordane		5103-71-9	5.00E-04	I	3.50E-01	I	7.00E-04	b	1.00E-04	b	2.00E-04	b	3.50E-01
beta-Chlordane		5103-74-2	5.00E-04	I	3.50E-01	I	7.00E-04	b	1.00E-04	b	2.00E-04	b	3.50E-01
gamma-Chlordane		12789-03-6	5.00E-04	I	3.50E-01	I	7.00E-04	b	1.00E-04	b	2.00E-04	b	3.50E-01
4-Chloroaniline		106-47-8	4.00E-03	I									
Chlorobenzene	(V)	108-90-7	2.00E-02	I			2.00E-02	H			1.70E-02	E	
Chloroethane (ethyl chloride)	(V)	75-00-3	4.00E-01	E	2.90E-03	E	1.00E+01	I			2.86E+00	I	
Chloroform	(V)	67-66-3	1.00E-02	I			3.00E-04	E	2.30E-05		8.60E-05	E	8.05E-02
Chloromethane (methyl chloride)	(V)	74-87-3			1.30E-02	H			1.80E-06	H	2.60E-02	I	3.50E-03
2-Chloronaphthalene	(V)	91-58-7	8.00E-02	I									
2-Chlorophenol	(V)	95-57-8	5.00E-03	I									
Chromium III		16065-83-1	1.50E+00	I									
Chromium VI		18540-29-9	3.00E-03	I			1.00E-04	I	1.20E-02	H	3.00E-05	I	4.10E+01
Chrysene		218-01-9			7.30E-03	E			8.80E-04	E			3.10E-03
Cobalt		7440-48-4	2.00E-02	E							5.70E-06	E	
Copper		7440-50-8	4.00E-02	H									
Cyanide		57-12-5	2.00E-02	I									
4,4-DDD		72-54-8			2.40E-01	I							
4,4-DDE		72-55-9			3.40E-01	I							
4,4-DDT		50-29-3	5.00E-04	I	3.40E-01	I			9.70E-05	I			3.40E-01
Dibenzo(a,h)anthracene		53-70-3			7.30E+00	E			8.80E-01	E			3.10E+00
Dibenzofuran		132-64-9	4.00E-03	E									
Dibromochloromethane		124-48-1	2.00E-02	I	8.40E-02	I							
Di-n-butylphthalate		84-74-2	1.00E-01	I									
1,2-Dichlorobenzene (o-)	(V)	95-50-1	9.00E-02	I			2.00E-01	H			4.00E-02	H	
1,4-Dichlorobenzene (p-)	(V)	106-46-7	3.00E-02	E	2.40E-02	H	8.00E-01				2.30E-01	I	2.20E-02
3,3-Dichlorobenzidine		91-94-1			4.50E-01	I							

Table 3. Toxicity Values Used for the RFETS Human Health PRGs

1,1-Dichloroethane	(V)	75-34-3	1.00E-01	H			5.00E-01	H			1.43E-01	A	
1,2-Dichloroethane	(V)	107-06-2	3.00E-02	E	9.10E-02	I	5.00E-03	E	2.60E-05	I	1.40E-03	E	9.10E-02
1,1-Dichloroethene	(V)	75-35-4	9.00E-03	I	6.00E-01	I			5.00E-05	I			1.75E-01
1,2-Dichloroethene (total)	(V)	540-59-0	9.00E-03	H									
2,4-Dichlorophenol (at pH 6.8)		120-83-2	3.00E-03	I									
1,2-Dichloropropane	(V)	78-87-5			6.80E-02	H	4.00E-03	I			1.14E-03	I	
cis-1,3-Dichloropropene	(V)	10061-01-5	3.00E-02	Ic	1.00E-01	I	2.00E-02	Ic	4.00E-03	Ic	5.71E-03	Ic	1.40E+01
trans-1,3-Dichloropropene	(V)	10061-02-6	3.00E-02	Ic	1.00E-01	I	2.00E-02	Ic	4.00E-03	Ic	5.71E-03	Ic	1.40E+01
Dieldrin		60-57-1	5.00E-05	I	1.60E+01	I			4.60E-03	I			1.60E+01
Diethylphthalate		84-66-2	8.00E-01	I									
2,4-Dimethylphenol	(V)	105-67-9	2.00E-02	I									
Dimethylphthalate		131-11-3	1.00E+01	W									
4,6-Dinitro-2-methylphenol (4,6-dinitro-o-cresol)	(V)	534-52-1	1.00E-03	E									
2,4-Dinitrophenol		51-28-5	2.00E-03	I									
2,4-Dinitrotoluene		121-14-2	2.00E-03	I	6.80E-01	I							
2,6-Dinitrotoluene		606-20-2	1.00E-03	H	6.80E-01	I							
Di-n-octylphthalate		117-84-0	2.00E-02	H					4.00E-06	E			1.40E-02
Endosulfan I		959-98-8	6.00E-03	I									
Endosulfan II		33213-65-9	6.00E-03	I									
Endosulfan sulfate		1031-07-8	6.00E-03	I									
Endosulfan (technical)		115-29-7	6.00E-03	I									
Endrin (technical)		72-20-8	3.00E-04	I									
Ethylbenzene	(V)	100-41-4	1.00E-01	I			1.00E+00	I			2.86E-01	I	3.85E-03
Fluoranthene		206-44-0	4.00E-02	I									
Fluorene	(V)	86-73-7	6.00E-02	I									
Heptachlor		76-44-8	5.00E-04	I	4.50E+00	I			1.30E-03	I			4.50E+00
Heptachlor epoxide		1024-57-3	1.30E-05	I	9.10E+00	I			2.60E-03	I			9.10E+00
Hexachlorobenzene		118-74-1	8.00E-04	I	1.60E+00	I			4.60E-04	I			1.60E+00
Hexachlorobutadiene		87-68-3	2.00E-04	H	7.80E-02	I			2.20E-05	I			7.80E-02
Hexachlorocyclopentadiene		77-47-4	6.00E-03	I			7.00E-05	I			5.70E-05	I	
Hexachloroethane		67-72-1	1.00E-03	I	1.40E-02	I			4.00E-06	I			1.40E-02
Indeno(1,2,3-cd)pyrene		193-39-5			7.30E-01	E			8.80E-02	E			
Iron		7439-89-6	3.00E-01	E									

Table 3. Toxicity Values Used for the RFETS Human Health PRGs

Isophorone		78-59-1	2.00E-01	I	9.50E-04	I							
Lead		7439-92-1											
Lithium		7439-93-2	2.00E-02	E									
Magnesium		7439-95-4											
Manganese (Food)		7439-96-6	1.40E-01	I							1.43E-05	I	
Mercury (elemental)		7439-97-6					3.00E-04	H			8.60E-05	I	
Methoxychlor		72-43-5	5.00E-03	I									
Methylene chloride (dichloromethane)	(V)	75-09-2	6.00E-02	I	7.50E-03	I	3.00E+00	H	4.70E-07	I	8.57E-01	H	1.65E-03
2-Methylnaphthalene	(V)	91-57-6	2.00E-02	E									
4-Methyl-2-pentanone (methyl isobutyl ketone)	(V)	108-10-1	8.00E-02	H			8.00E-02	H			2.29E-02	H	
2-Methylphenol (o-cresol)		95-48-7	5.00E-02	I									
4-Methylphenol (p-cresol)		106-44-5	5.00E-03	H									
Molybdenum		7439-98-7	5.00E-03	I									
Naphthalene	(V)	91-20-3	2.00E-02	I			3.00E-03	I			9.00E-04	I	
Nickel (soluble)		7440-02-0	2.00E-02	I									
2-Nitroaniline		88-74-4					2.00E-04	H			5.71E-05	H	
Nitrobenzene	(V)	98-95-3	5.00E-04	I			2.00E-03	H			4.00E-04	A	
4-Nitrophenol	(V)	100-02-7	8.00E-03	E									
n-Nitrosodiphenylamine	(V)	86-30-6			4.90E-03	I							
n-Nitrosodipropylamine		621-64-7			7.00E+00	I							
Pentachlorophenol		87-86-5	3.00E-02	I	1.20E-01	I							
Phenol		108-95-2	6.00E-01	I									
Pyrene		129-00-0	3.00E-02	I									
Selenium		7782-49-2	5.00E-03	I									
Silver		7440-22-4	5.00E-03	I									
Strontium		7440-24-6	6.00E-01	I									
Styrene	(V)	100-42-5	2.00E-01	I			1.00E+00	I			2.86E-01	I	
1,1,2,2-Tetrachloroethane	(V)	79-34-5	6.00E-02	E	2.00E-01	I			5.80E-05	I			2.00E-01
Tetrachloroethene	(V)	127-18-4	1.00E-02	I	5.20E-02	E	6.00E-01	E	5.80E-07	E			2.03E-03
Tin		7440-31-5	6.00E-01	H									
Toluene	(V)	108-88-3	2.00E-01	I			4.00E-01	I			1.14E-01	I	
Toxaphene		8001-35-2			1.10E+00	I			3.20E-04	I			1.10E+00
1,2,4-Trichlorobenzene	(V)	120-82-1	1.00E-02	I			2.00E-01	H			5.71E-02	H	

Table 3. Toxicity Values Used for the RFETS Human Health PRGs

1,1,1-Trichloroethane	(V)	71-55-6	2.80E-01	E			2.20E+00	E			6.30E-01	E	
1,1,2-Trichloroethane	(V)	79-00-5	4.00E-03	I	5.70E-02	I			1.60E-05	I			5.60E-02
Trichloroethene	(V)	79-01-6	3.00E-04	E	4.00E-01	E			1.70E-06	I	1.00E-02	E	4.00E-01
2,4,5-Trichlorophenol		95-95-4	1.00E-01	I									
2,4,6-Trichlorophenol		88-06-2			1.10E-02	I			3.10E-06	I			1.00E-02
Uranium (soluble salts)		No CASN	3.00E-03	1									
Vanadium		7440-62-2	7.00E-03	H									
Vinyl acetate		108-05-4	1.00E+00	H			2.00E-01				5.71E-02	I	
Vinyl chloride (dult and child)	(V)	75-01-4	3.00E-03	I	1.40E+00	I	1.00E-01	I	8.8E-06		2.80E-02	I	3.00E-02
Vinyl chloride (adult)	(V)	75-01-4	3.00E-03	I	7.20E-01		1.00E-01		4.4E-06		2.80E-02		1.54E-02
Xylene (total)	(V)	1330-20-7	2.00E+00	I									
Zinc		7440-66-6	3.00E-01	I									
Nitrate		14797-55-8	1.60E+00	I									
Nitrite		14797-65-0	1.00E-01	I									
Ammonium (as Ammonia)		7664-41-7					1.00E-01	I			2.86E-02	I	
		7782-41-4	6.00E-02	I									

Notes:

1. Only those constituents in ALF are included.

Sources:

I = IRIS H = HEAST A = HEAST Alternate W = Withdrawn from IRIS or HEAST

E = EPA-NCEA provisional value F = Federal Guidance Report No. 13 O = other

(V) = Chemicals listed are volatile.

a = Values given are for PCBs.

b = Values given are for chlordane (CAS no. 12789-03-6).

c = Values given are for 1,3-dichloropropene.

References:

EPA, 1993 = U.S. Environmental Protection Agency. 1993. Research and Development-Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. Prepared for the Office of Health and Environmental Assessment by the Environmental Criteria and Assessment Office, Office of Health and Environmental Assessment, Cincinnati, OH. Final Draft. ECAO-CIN-842. March

EPA, 1997 = U.S. Environmental Protection Agency. 1997. Region III Risk-Based Concentration Table. Philadelphia, PA. October 22.HEAST, 1997 = U.S. Environmental Protection Agency. 1997. Health Effects Assessment Summary Tables, FY-1997 Annual. Office of Solid Waste andEmergency Response, Washington, D.C. EPA/540/R-97/036. July.EPA, 1999. Federal Guidance Report No. 13, Eckerman, K.F., Leggett, R.W., Nelson, C.B., Puskin, J.S., and Richardson, A.C.B. . "Cancer Risk Coefficients for Environmental Exposure to Radionuclides," EPA 402-R-99-001.
IRIS, 2002 = U.S. Environmental Protection Agency. 2002. Integrated Risk Information System. On-line database. Office of Research and Development, Cincinnati, OH. April.

(1) Ecological PRGs less than Worker PRGs denoted with shading.
(2) The invertebrate receptor has the lowest PRG for Aroclor 1254, however, little confidence is placed on the data used to calculate that value. Therefore, the lowest vertebrate PRG was used.
(3) The PRG for the Preble's Meadow Jumping Mouse is the lowest PRG. If this PRG is exceeded, an evaluation of the habitat where the sample was collected should be made. If the habitat is not suspected to be suitable for the Preble's Meadow Jumping Mouse, the next lowest PRG should be used.
NV = No reliable PRG could be calculated due to a lack of toxicity information for the receptor.

Table 9. Preliminary Remediation Goals for Ecological Receptors

Analyte	NOAEL or LOAEL	Deer Mouse - Insectivore	Deer Mouse - Omnivore	Herbi-vorous Mouse (LOAEL)	Insect-ivorous Mouse (LOAEL)	Preble's Meadow Jumping Mouse (NOAEL)	Mourning Dove (LOAEL)	Prairie Dog (LOAEL)	American Kestrel (LOAEL)	Inverte-brate	Lowest Eco PRG (1)	Limiting Receptor	Worker PRG 1E-05 or HQ=1
Acetone	1	2.89E+05	1.48E+03	8.06E+02	2.76E+05	2.65E+02	NV	2.11E+02	NV	NV	2.11E+02	Prairie Dog	1.02E+05
Aroclor 1254	1	7.87E+00	1.57E+01	3.20E+03	5.56E+02	8.59E+02	1.44E+03	3.71E+02	1.17E+03	4.90E-04	3.71E+02	Prairie Dog	1.24E+01
Arsenic	1	1.67E+02	1.11E+02	8.89E+01	1.76E+02	4.92E+01	3.64E+01	2.16E+01	1.85E+02	5.00E+01	2.16E+01	Prairie Dog	2.22E+01
Benzo(a)anthracene	1	1.22E+04	5.66E+02	3.91E+03	1.13E+04	2.46E+03	NV	8.00E+02	NV	NV	8.00E+02	Prairie Dog	3.49E+01
Benzo(a)pyrene	1	6.79E+03	6.90E+02	6.10E+03	6.71E+03	3.84E+03	NV	1.11E+03	NV	2.57E+01	2.57E+01	Invertebrate	3.49E+00
Benzo(b)fluoranthene	1	6.79E+03	6.90E+02	5.36E+03	6.71E+03	3.37E+03	NV	1.01E+03	NV	NV	1.01E+03	Prairie Dog	3.49E+01
Benzo(k)fluoranthene	1	6.11E+03	6.86E+02	5.36E+03	6.10E+03	3.37E+03	NV	1.01E+03	NV	NV	1.01E+03	Prairie Dog	3.49E+02
Beryllium	1	2.48E+01	1.22E+01	8.71E+00	2.60E+01	1.50E+01	NV	2.15E+00	NV	NV	2.15E+00	Prairie Dog	9.21E+02
Carbon Tetrachloride	1	3.32E+02	5.78E+02	2.42E+03	3.61E+02	8.32E+01	NV	6.18E+02	NV	NV	8.32E+01	PMJM(3)	8.15E+01
Chloroform	1	4.38E+02	3.96E+02	3.92E+02	4.75E+02	2.92E+02	NV	1.01E+02	NV	NV	1.01E+02	Prairie Dog	1.91E+01
Hexachloroethane	1	7.02E+00	1.40E+01	8.54E+03	3.10E+03	3.77E+03	NV	1.99E+03	NV	NV	1.99E+03	Prairie Dog	7.37E+02
Lead	1	3.46E+01	6.54E+01	6.42E+02	3.76E+01	1.27E+02	9.77E+01	1.49E+02	2.56E+01	6.88E+03	2.56E+01	Kestrel	1.00E+03
Methyl Ethyl Ketone	1	1.80E+05	3.02E+03	1.66E+03	1.84E+05	6.42E+02	NV	4.33E+02	NV	NV	4.33E+02	Prairie Dog	1.90E+05
Methylene Chloride	1	7.37E+02	2.35E+02	1.52E+02	7.95E+02	1.29E+02	NV	3.95E+01	NV	NV	3.95E+01	Prairie Dog	2.53E+03
Tetrachloroethene	1	4.93E+02	7.82E+02	2.06E+03	5.35E+02	3.75E+01	NV	5.29E+02	NV	NV	3.75E+01	PMJM(3)	6.51E+02
Trichloroethene	1	6.40E+02	9.48E+02	1.98E+03	6.96E+02	1.49E+03	NV	5.09E+02	NV	NV	5.09E+02	Prairie Dog	1.96E+01
Toluene	1	1.97E+02	3.38E+02	1.28E+03	2.15E+02	1.28E+02	NV	3.29E+02	NV	NV	1.28E+02	PMJM(3)	3.13E+04
Uranium	1	1.54E+02	2.07E+02	3.26E+02	1.64E+02	1.96E+02	2.21E+04	6.78E+01	2.85E+04	NV	6.78E+01	Prairie Dog	3.07E+03
Vanadium	1	8.42E+02	1.41E+03	3.71E+03	8.67E+02	4.45E+03	2.92E+03	4.36E+02	4.33E+02	NV	4.33E+02	Kestrel	7.15E+03
Vinyl Chloride	1	9.34E+00	2.62E+00	1.66E+00	1.01E+01	1.66E-01	NV	4.31E-01	NV	NV	1.66E-01	PMJM(3)	1.83E-01

All units are in mg/kg.

Table9. Preliminary Remediation Goals for Rural Groundwater

		Groundwater PRGs at Risk = 1E-06 and HQ = 0.1			Groundwater PRGs at Risk – 1E-05 and HQ1		
		Rural Resident	Rural Resident	Rural Resident	Rural Resident	Rural Resident	Rural Resident
		Noncarcinogenic	Carcinogenic	Groundwater	Noncarcinogenic	Carcinogenic	Groundwater
	CAS	Groundwater	Groundwater	Risk = 1E-06	Groundwater	Groundwater	Risk = 1E-05
Target Analyte List	Number	HQ = 0.1	Risk = 1E-06	or HQ = 0.1	HQ = 1.0	Risk = 1E-05	or HQ = 1.0
Chemical		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Ammonium (as Ammonia)	7664-41-7						
Fluoride (as fluorine)	7782-41-4	2.19E-01		2.19E-01	2.19E+00		2.19E+00

Table9. Preliminary Remediation Goals for Rural Groundwater

			Groundwater PRGs at Risk = 1E-06 and HQ = 0.1			Groundwater PRGs at Risk – 1E-05 and HQ1		
			Rural Resident	Rural Resident	Rural Resident	Rural Resident	Rural Resident	Rural Resident
			Noncarcinogenic	Carcinogenic	Groundwater	Noncarcinogenic	Carcinogenic	Groundwater
		CAS	Groundwater	Groundwater	Risk = 1E-06	Groundwater	Groundwater	Risk = 1E-05
Target Analyte List		Number	HQ = 0.1	Risk = 1E-06	or HQ = 0.1	HQ = 1.0	Risk = 1E-05	or HQ = 1.0
Chemical			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
n-Nitrosodiphenylamine	(V)	86-30-6		1.74E-02	1.74E-02		1.74E-01	1.74E-01
n-Nitrosodipropylamine		621-64-7		1.22E-05	1.22E-05		1.22E-04	1.22E-04
Pentachlorophenol		87-86-5	1.10E-01	7.10E-04	7.10E-04	1.10E+00	7.10E-03	7.10E-03
Phenol		108-95-2	2.19E+00		2.19E+00	2.19E+01		2.19E+01
Pyrene		129-00-0	1.10E-01		1.10E-01	1.10E+00		1.10E+00
Selenium		7782-49-2	1.83E-02		1.83E-02	1.83E-01		1.83E-01
Silver		7440-22-4	1.83E-02		1.83E-02	1.83E-01		1.83E-01
Strontium		7440-24-6	2.19E+00		2.19E+00	2.19E+01		2.19E+01
Stryene	(V)	100-42-5	7.30E-01		7.30E-01	7.30E+00		7.30E+00
1,1,2,2-Tetrachloroethane	(V)	79-34-5	2.19E-01	4.26E-04	4.26E-04	2.19E+00	4.26E-03	4.26E-03
Tetrachloroethene	(V)	127-18-4	3.65E-02	1.64E-03	1.64E-03	3.65E-01	1.64E-02	1.64E-02
Tin		7440-31-5	2.19E+00		2.19E+00	2.19E+01		2.19E+01
Toluene	(V)	108-88-3	7.30E-01		7.30E-01	7.30E+00		7.30E+00
Toxaphene		8001-35-2		7.74E-05	7.74E-05		7.74E-04	7.74E-04
1,2,4-Trichlorobenzene	(V)	120-82-1	3.65E-02		3.65E-02	3.65E-01		3.65E-01
1,1,1-Trichloroethane	(V)	71-55-6	1.02E+00		1.02E+00	1.02E+01		1.02E+01
1,1,2-Trichloroethane	(V)	79-00-5	1.46E-02	1.49E-03	1.49E-03	1.46E-01	1.49E-02	1.49E-02
Trichloroethene	(V)	79-01-6	1.10E-03	2.13E-04	2.13E-04	1.10E-02	2.13E-03	2.13E-03
2,4,5-Trichlorophenol		95-95-4	3.65E-01		3.65E-01	3.65E+00		3.65E+00
2,4,6-Trichlorophenol		88-06-2		7.74E-03	7.74E-03		7.74E-02	7.74E-02
Uranium (soluable salts)		88-06-2	1.10E-02		1.10E-02			
Vanadium		7440-62-2	2.56E-02		2.56E-02	2.56E-01		2.56E-01
Vinyl acetate		108-05-4	3.65E+00		3.65E+00	3.65E+01		3.65E+01
Vinyl chloride	(V)	75-01-4	1.10E-02	6.08E-05	6.08E-05	1.10E-01	6.08E-04	6.08E-04
Xylene (total)	(V)	1330-20-7	7.30E+00		7.30E+00	7.30E+01		7.30E+01
Zinc		7440-66-6	1.10E+00		1.10E+00	1.10E+01		1.10E+01
Nitrate		14797-55-8	5.84E+00		5.84E+00	5.84E+01		5.84E+01
Nitrite		14797-65-0	3.65E-01		3.65E-01	3.65E+00		3.65E+00

Table9. Preliminary Remediation Goals for Rural Groundwater

			Groundwater PRGs at Risk = 1E-06 and HQ = 0.1			Groundwater PRGs at Risk – 1E-05 and HQ1		
			Rural Resident	Rural Resident	Rural Resident	Rural Resident	Rural Resident	Rural Resident
			Noncarcinogenic	Carcinogenic	Groundwater	Noncarcinogenic	Carcinogenic	Groundwater
		CAS	Groundwater	Groundwater	Risk = 1E-06	Groundwater	Groundwater	Risk = 1E-05
Target Analyte List		Number	HQ = 0.1	Risk = 1E-06	or HQ = 0.1	HQ = 1.0	Risk = 1E-05	or HQ = 1.0
Chemical			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Ethylbenzene	(V)	100-41-4	3.65E-01		3.65E-01	3.65E+00		3.65E+00
Fluoranthene		206-44-0	1.46E-01		1.46E-01	1.46E+00		1.46E+00
Fluorene	(V)	86-73-7	2.19E-01		2.19E-01	2.19E+00		2.19E+00
Heptachlor		76-44-8	1.83E-03	1.89E-05	1.89E-05	1.83E-02	1.89E-04	1.89E-04
Heptachlor epoxide		1024-57-3	4.75E-05	9.36E-06	9.36E-06	4.75E-04	9.36E-05	9.36E-05
Hexachlorobenzene		118-74-1	2.92E-03	5.32E-05	5.32E-05	2.92E-02	5.32E-04	5.32E-04
Hexachlorobutadiene		87-68-3	7.30E-04	1.09E-03	7.30E-04	7.30E-03	1.09E-02	7.30E-03
Hexachlorocyclopentadiene		77-47-4	2.19E-02		2.19E-02	2.19E-01		2.19E-01
Hexachloroethane		67-72-1	3.65E-03	6.08E-03	3.65E-03	3.65E-02	6.08E-02	3.65E-02
Indeno(1,2,3-cd)pyrene		193-39-5		1.17E-04	1.17E-04		1.17E-03	1.17E-03
Iron		7439-89-6	1.10E+00		1.10E+00	1.10E+01		1.10E+01
Isophorone		78-59-1	7.30E-01	8.96E-02	8.96E-02	7.30E+00	8.96E-01	8.96E-01
Lead		7439-92-1			4.00E+02			4.00E+02
Lithium		7439-93-2	7.30E-02		7.30E-02	7.30E-01		7.30E-01
Magnesium		7439-95-4						
Manganese (Nonfood)		7439-96-5	5.11E-01		5.11E-01	5.11E+00		5.11E+00
Mercury (elemental)		7439-97-6						
Methoxychlor		72-43-5	1.83E-02		1.83E-02	1.83E-01		1.83E-01
Methylene chloride (dichloromethane)	(V)	75-09-2	2.19E-01	1.14E-02	1.14E-02	2.19E+00	1.14E-01	1.14E-01
2-Methylnaphthalene	(V)	91-57-6	7.30E-02		7.30E-02	7.30E-01		7.30E-01
4-Methyl-2-pentanone (methyl isobutyl ketone)	(V)	108-10-1	2.92E-01		2.92E-01	2.92E+00		2.92E+00
2-Methylphenol (o-cresol)		95-48-7	1.83E-01		1.83E-01	1.83E+00		1.83E+00
4-Methylphenol (p-cresol)		106-44-5	1.83E-02		1.83E-02	1.83E-01		1.83E-01
Molybdenum		7439-98-7	1.83E-02		1.83E-02	1.83E-01		1.83E-01
Naphthalene	(V)	91-20-3	7.30E-02		7.30E-02	7.30E-01		7.30E-01
Nickel (soluble)		7440-02-0	7.30E-02		7.30E-02	7.30E-01		7.30E-01
2-Nitroaniline		88-74-4						
Nitrobenzene	(V)	98-95-3	1.83E-03		1.83E-03	1.83E-02		1.83E-02
4-Nitrophenol	(V)	100-02-7	2.92E-02		2.92E-02	2.92E-01		2.92E-01

Table9. Preliminary Remediation Goals for Rural Groundwater

			Groundwater PRGs at Risk = 1E-06 and HQ = 0.1			Groundwater PRGs at Risk – 1E-05 and HQ1		
			Rural Resident	Rural Resident	Rural Resident	Rural Resident	Rural Resident	Rural Resident
			Noncarcinogenic	Carcinogenic	Groundwater	Noncarcinogenic	Carcinogenic	Groundwater
		CAS	Groundwater	Groundwater	Risk = 1E-06	Groundwater	Groundwater	Risk = 1E-05
Target Analyte List		Number	HQ = 0.1	Risk = 1E-06	or HQ = 0.1	HQ = 1.0	Risk = 1E-05	or HQ = 1.0
Chemical			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Dibenz(a,h)anthracene		53-70-3		1.17E-05	1.17E-05		1.17E-04	1.17E-04
Dibenzofuran		132-64-9	1.46E-02		1.46E-02	1.46E-01		1.46E-01
Dibromochloromethane		124-48-1	7.30E-02	1.01E-03	1.01E-03	7.30E-01	1.01E-02	1.01E-02
Di-n-butylphthalate		84-74-2	3.65E-01		3.65E-01	3.65E+00		3.65E+00
1,2-Dichlorobenzene (o-)	(V)	95-50-1	3.29E-01		3.29E-01	3.29E+00		3.29E+00
1,4-Dichlorobenzene (p-)	(V)	106-46-7	1.10E-01	3.55E-03	3.55E-03	1.10E+00	3.55E-02	3.55E-02
3,3-Dichlorobenzidine		91-94-1		1.89E-04	1.89E-04		1.89E-03	1.89E-03
1,1-Dichloroethane	(V)	75-34-3	3.65E-01		3.65E-01	3.65E+00		3.65E+00
1,2-Dichloroethane	(V)	107-06-2	1.10E-01	9.36E-04	9.36E-04	1.10E+00	9.36E-03	9.36E-03
1,1-Dichloroethene	(V)	75-35-4	3.29E-02	1.42E-04	1.42E-04	3.29E-01	1.42E-03	1.42E-03
1,2-Dichloroethene (total)	(V)	540-59-0	3.29E-02		3.29E-02	3.29E-01		3.29E-01
2,4-Dichlorophenol (at pH 6.8)		120-83-2	1.10E-02		1.10E-02	1.10E-01		1.10E-01
1,2-Dichloropropane	(V)	78-87-5		1.25E-03	1.25E-03		1.25E-02	1.25E-02
cis-1,3-Dichloropropene	(V)	10061-01-5	1.10E-01	8.52E-04	8.52E-04	1.10E+00	8.52E-03	8.52E-03
trans-1,3-Dichloropropene	(V)	10061-02-6	1.10E-01	8.52E-04	8.52E-04	1.10E+00	8.52E-03	8.52E-03
Dieldrin		60-57-1	1.83E-04	5.32E-06	5.32E-06	1.83E-03	5.32E-05	5.32E-05
Diethylphthalate		84-66-2	2.92E+00		2.92E+00	2.92E+01		2.92E+01
2,4-Dimethylphenol	(V)	105-67-9	7.30E-02		7.30E-02	7.30E-01		7.30E-01
Dimethylphthalate		131-11-3	3.65E+01		3.65E+01	3.65E+02		3.65E+02
4,6-Dinitro-2-methylphenol (4,6-dinitro-o-cresol)	(V)	534-52-1	3.65E-03		3.65E-03	3.65E-02		3.65E-02
2,4-Dinitrophenol		51-28-5	7.30E-03		7.30E-03	7.30E-02		7.30E-02
2,4-Dinitrotoluene		121-14-2	7.30E-03	1.25E-04	1.25E-04	7.30E-02	1.25E-03	1.25E-03
2,6-Dinitrotoluene		606-20-2	3.65E-03	1.25E-04	1.25E-04	3.65E-02	1.25E-03	1.25E-03
Di-n-octylphthalate		117-84-0	7.30E-02		7.30E-02	7.30E-01		7.30E-01
Endosulfan I		959-98-8	2.19E-02		2.19E-02	2.19E-01		2.19E-01
Endosulfan II		33213-65-9	2.19E-02		2.19E-02	2.19E-01		2.19E-01
Endosulfan sulfate		1031-07-8	2.19E-02		2.19E-02	2.19E-01		2.19E-01
Endosulfan (technical)		115-29-7	2.19E-02		2.19E-02	2.19E-01		2.19E-01
Endrin (technical)		72-20-8	1.10E-03		1.10E-03	1.10E-02		1.10E-02

Table9. Preliminary Remediation Goals for Rural Groundwater

			Groundwater PRGs at Risk = 1E-06 and HQ = 0.1			Groundwater PRGs at Risk – 1E-05 and HQ1		
			Rural Resident	Rural Resident	Rural Resident	Rural Resident	Rural Resident	Rural Resident
			Noncarcinogenic	Carcinogenic	Groundwater	Noncarcinogenic	Carcinogenic	Groundwater
		CAS	Groundwater	Groundwater	Risk = 1E-06	Groundwater	Groundwater	Risk = 1E-05
Target Analyte List		Number	HQ = 0.1	Risk = 1E-06	or HQ = 0.1	HQ = 1.0	Risk = 1E-05	or HQ = 1.0
Chemical			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
bis(2-ethylhexyl)phthalate		117-81-7	7.30E-02	6.08E-03	6.08E-03	7.30E-01	6.08E-02	6.08E-02
Bromodichloromethane	(V)	75-27-4	7.30E-02	1.37E-03	1.37E-03	7.30E-01	1.37E-02	1.37E-02
Bromoform	(V)	75-25-2	7.30E-02	1.08E-02	1.08E-02	7.30E-01	1.08E-01	1.08E-01
Bromomethane (methyl bromide)	(V)	74-83-9	5.11E-03		5.11E-03	5.11E-02		5.11E-02
2-Butanone (methyl ethyl ketone)	(V)	78-93-3	2.19E+00		2.19E+00	2.19E+01		2.19E+01
Butylbenzylphthalate		85-68-7	7.30E-01		7.30E-01	7.30E+00		7.30E+00
Cadmium (food)		7440-43-9						
Cadmium (water)		7440-43-9	1.83E-03		1.83E-03	1.83E-02		1.83E-02
Carbon disulfide	(V)	75-15-0	3.65E-01		3.65E-01	3.65E+00		3.65E+00
Carbon tetrachloride	(V)	56-23-5	2.56E-03	6.55E-04	6.55E-04	2.56E-02	6.55E-03	6.55E-03
alpha-Chlordane		5103-71-9	1.83E-03	2.43E-04	2.43E-04	1.83E-02	2.43E-03	2.43E-03
beta-Chlordane		5103-74-2	1.83E-03	2.43E-04	2.43E-04	1.83E-02	2.43E-03	2.43E-03
gamma-Chlordane		12789-03-6	1.83E-03	2.43E-04	2.43E-04	1.83E-02	2.43E-03	2.43E-03
4-Chloroaniline		106-47-8	1.46E-02		1.46E-02	1.46E-01		1.46E-01
Chlorobenzene	(V)	108-90-7	7.30E-02		7.30E-02	7.30E-01		7.30E-01
Chloroethane (ethyl chloride)	(V)	75-00-3	1.46E+00	2.94E-02	2.94E-02	1.46E+01	2.94E-01	2.94E-01
Chloroform	(V)	67-66-3	3.65E-02		3.65E-02	3.65E-01		3.65E-01
Chloromethane (methyl chloride)	(V)	74-87-3		6.55E-03	6.55E-03		6.55E-02	6.55E-02
2-Chloronaphthalene	(V)	91-58-7	2.92E-01		2.92E-01	2.92E+00		2.92E+00
2-Chlorophenol	(V)	95-57-8	1.83E-02		1.83E-02	1.83E-01		1.83E-01
Chromium III		16065-83-1	5.48E+00		5.48E+00	5.48E+01		5.48E+01
Chromium VI		18540-29-9	1.10E-02		1.10E-02	1.10E-01		1.10E-01
Chrysene		218-01-9		1.17E-02	1.17E-02		1.17E-01	1.17E-01
Cobalt		7440-48-4	7.30E-02		7.30E-02	7.30E-01		7.30E-01
Copper		7440-50-8	1.46E-01		1.46E-01	1.46E+00		1.46E+00
Cyanide		57-12-5	7.30E-02		7.30E-02	7.30E-01		7.30E-01
4,4-DDD		72-54-8		3.55E-04	3.55E-04		3.55E-03	3.55E-03
4,4-DDE		72-55-9		2.50E-04	2.50E-04		2.50E-03	2.50E-03
4,4-DDT		50-29-3	1.83E-03	2.50E-04	2.50E-04	1.83E-02	2.50E-03	2.50E-03

Table9. Preliminary Remediation Goals for Rural Groundwater

			Groundwater PRGs at Risk = 1E-06 and HQ = 0.1			Groundwater PRGs at Risk – 1E-05 and HQ1		
			Rural Resident	Rural Resident	Rural Resident	Rural Resident	Rural Resident	Rural Resident
			Noncarcinogenic	Carcinogenic	Groundwater	Noncarcinogenic	Carcinogenic	Groundwater
		CAS	Groundwater	Groundwater	Risk = 1E-06	Groundwater	Groundwater	Risk = 1E-05
Target Analyte List		Number	HQ = 0.1	Risk = 1E-06	or HQ = 0.1	HQ = 1.0	Risk = 1E-05	or HQ = 1.0
Chemical			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Acenaphthene	(V)	83-32-9	2.19E-01		2.19E-01	2.19E+00		2.19E+00
Acetone	(V)	67-64-1	3.65E-01		3.65E-01	3.65E+00		3.65E+00
Aldrin		309-00-2	1.10E-04	5.01E-06	5.01E-06	1.10E-03	5.01E-05	5.01E-05
Aluminum		7429-90-5	3.65E+00		3.65E+00	3.65E+01		3.65E+01
Anthracene	(V)	120-12-7	1.10E+00		1.10E+00	1.10E+01		1.10E+01
Antimony		7440-36-0	1.46E-03		1.46E-03	1.46E-02		1.46E-02
Aroclor 1016		12674-11-2	2.56E-04	1.22E-03	2.56E-04	2.56E-03	1.22E-02	2.56E-03
Aroclor 1221		11104-28-2		4.26E-05	4.26E-05		4.26E-04	4.26E-04
Aroclor 1232		11141-16-5		4.26E-05	4.26E-05		4.26E-04	4.26E-04
Aroclor 1242		53469-21-9		4.26E-05	4.26E-05		4.26E-04	4.26E-04
Aroclor 1248		12672-29-6		4.26E-05	4.26E-05		4.26E-04	4.26E-04
Aroclor 1254		11097-69-1	7.30E-05	4.26E-05	4.26E-05	7.30E-04	4.26E-04	4.26E-04
Aroclor 1260		11096-82-5		4.26E-05	4.26E-05		4.26E-04	4.26E-04
Arsenic		7440-38-2	1.10E-03	5.68E-05	5.68E-05	1.10E-02	5.68E-04	5.68E-04
Barium		7440-39-3	2.56E-01		2.56E-01	2.56E+00		2.56E+00
Benzene	(V)	71-43-2	1.10E-02	1.55E-03	1.55E-03	1.10E-01	1.55E-02	1.55E-02
alpha-BHC		319-84-6		1.35E-05	1.35E-05		1.35E-04	1.35E-04
beta-BHC		319-85-7		4.73E-05	4.73E-05		4.73E-04	4.73E-04
delta-BHC		319-86-8						
gamma-BHC (Lindane)		58-89-9	1.10E-03	6.55E-05	6.55E-05	1.10E-02	6.55E-04	6.55E-04
Benzo(a)anthracene		56-55-3		1.17E-04	1.17E-04		1.17E-03	1.17E-03
Benzo(a)pyrene		50-32-8		1.17E-05	1.17E-05		1.17E-04	1.17E-04
Benzo(b)fluoranthene		205-99-2		1.17E-04	1.17E-04		1.17E-03	1.17E-03
Benzo(k)fluoranthene		207-08-9		1.17E-03	1.17E-03		1.17E-02	1.17E-02
Benzoic Acid (at pH 7)		65-85-0	1.46E+01		1.46E+01	1.46E+02		1.46E+02
Benzyl Alcohol		100-51-6	1.10E+00		1.10E+00	1.10E+01		1.10E+01
Beryllium		7440-41-7	7.30E-03		7.30E-03	7.30E-02		7.30E-02
bis(2-chloroethyl)ether	(V)	111-44-4		7.74E-05	7.74E-05		7.74E-04	7.74E-04
bis(2-chloroisopropyl)ether	(V)	39638-32-9	1.46E-01	1.22E-03	1.22E-03	1.46E+00	1.22E-02	1.22E-02

Table 8. Preliminary Remediation Goals for Wildlife Refuge Worker

	Volatile Organics		PRGs at Risk = 1E-06 and HQ = 0.1				PRGs at Risk = 1E-05 and HQ =1			
			Adult WLRW	Adult WLRW	Adult WLRW		Adult WLRW	Adult WLRW	Adult WLRW	
			Noncarcinogenic	Carcinogenic	Soil PRG		Noncarcinogenic	Carcinogenic	Soil PRG	
		CAS	Soil PRG	Soil PRG	Risk = 1E-06		Soil PRG	Soil PRG	Risk = 1E-05	
Target Analyte List		Number	HQ = 0.1	Risk = 1E-06	or HQ = 0.1		HQ = 1.0	Risk = 1E-05	or HQ = 1.0	
Nitrate		14797-55-8	1.64E+05		1.64E+05		1.64E+06		1.64E+06	
Nitrite		14797-65-0	1.02E+04		1.02E+04		1.02E+05		1.02E+05	
Ammonium (as Ammonia)		7664-41-7	8.39E+05		8.39E+05		8.39E+06		8.39E+06	
Fluoride (as fluorine)		7782-41-4	6.13E+03		6.13E+03		6.13E+04		6.13E+04	

Table 8. Preliminary Remediation Goals for Wildlife Refuge Worker

	Volatile Organics		PRGs at Risk = 1E-06 and HQ = 0.1			PRGs at Risk = 1E-05 and HQ =1		
			Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW
			Noncarcinogenic	Carcinogenic	Soil PRG	Noncarcinogenic	Carcinogenic	Soil PRG
		CAS	Soil PRG	Soil PRG	Risk = 1E-06	Soil PRG	Soil PRG	Risk = 1E-05
Target Analyte List		Number	HQ = 0.1	Risk = 1E-06	or HQ = 0.1	HQ = 1.0	Risk = 1E-05	or HQ = 1.0
1,1,2,2-Tetrachloroethane	(V)	79-34-5	6.13E+03	1.00E+01	1.00E+01	6.13E+04	1.00E+02	1.00E+02
Tetrachloroethene	(V)	127-18-4	1.02E+03	6.15E+01	6.15E+01	1.02E+04	6.15E+02	6.15E+02
Tin		7440-31-5	6.13E+04		6.13E+04	6.13E+05		6.13E+05
Toluene	(V)	108-88-3	3.13E+03		3.13E+03	3.13E+04		3.13E+04
Toxaphene		8001-35-2		2.50E+00	2.50E+00		2.50E+01	2.50E+01
1,2,4-Trichlorobenzene	(V)	120-82-1	9.23E+02		9.23E+02	9.23E+03		9.23E+03
1,1,1-Trichloroethane	(V)	71-55-6	7.97E+03		7.97E+03	7.97E+04		7.97E+04
1,1,2-Trichloroethane	(V)	79-00-5	4.09E+02	2.36E+01	2.36E+01	4.09E+03	2.36E+02	2.36E+02
Trichloroethene	(V)	79-01-6	2.75E+01	1.96E+00	1.96E+00	2.75E+02	1.96E+01	1.96E+01
2,4,5-Trichlorophenol		95-95-4	1.02E+04		1.02E+04	1.02E+05		1.02E+05
2,4,6-Trichlorophenol		88-06-2		3.47E+02	3.47E+02		3.47E+03	3.47E+03
Uranium (soluble salts)		No CAS NO	3.07E+02		3.07E+02	3.07E+03		3.07E+03
Vanadium		7440-62-2	7.15E+02		7.15E+02	7.15E+03		7.15E+03
Vinyl acetate		108-05-4	9.63E+04		9.63E+04	9.63E+05		9.63E+05
Vinyl chloride	(V)	75-01-4	1.25E+02	4.12E+00	4.12E+00	1.25E+03	4.12E+01	4.12E+01
Xylene (total)	(V)	1330-20-7	2.04E+05		2.04E+05	2.04E+06		2.04E+06
Zinc		7440-66-6	3.07E+04		3.07E+04	3.07E+05		3.07E+05

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	Volatile Organics		PRGs at Risk = 1E-06 and HQ = 0.1					PRGs at Risk = 1E-05 and HQ =1				
			Adult WLRW		Adult WLRW		Adult WLRW	Adult WLRW		Adult WLRW		Adult WLRW
			Noncarcinogenic		Carcinogenic		Soil PRG	Noncarcinogenic		Carcinogenic		Soil PRG
		CAS	Soil PRG		Soil PRG		Risk = 1E-06	Soil PRG		Soil PRG		Risk = 1E-05
Target Analyte List		Number	HQ = 0.1		Risk = 1E-06		or HQ = 0.1	HQ = 1.0		Risk = 1E-05		or HQ = 1.0
4-Methyl-2-pentanone (methyl isobutyl ketone)	(V)	108-10-1	1.64E+03				1.64E+03	1.64E+04				1.64E+04
2-Methylphenol (o-cresol)		95-48-7	3.69E+03				3.69E+03	3.69E+04				3.69E+04
4-Methylphenol (p-cresol)		106-44-5	3.69E+02				3.69E+02	3.69E+03				3.69E+03
Molybdenum		7439-98-7	5.11E+02				5.11E+02	5.11E+03				5.11E+03
Naphthalene	(V)	91-20-3	3.09E+02				3.09E+02	3.09E+03				3.09E+03
Nickel (soluble)		7440-02-0	2.04E+03				2.04E+03	2.04E+04				2.04E+04
2-Nitroaniline		88-74-4	1.67E+03				1.67E+03	1.67E+04				1.67E+04
Nitrobenzene	(V)	98-95-3	3.32E+01				3.32E+01	3.32E+02				3.32E+02
4-Nitrophenol	(V)	100-02-7	8.18E+02				8.18E+02	8.18E+03				8.18E+03
n-Nitrosodiphenylamine	(V)	86-30-6			7.81E+02		7.81E+02			7.81E+03		7.81E+03
n-Nitrosodipropylamine		621-64-7			5.47E-01		5.47E-01			5.47E+00		5.47E+00
Pentachlorophenol		87-86-5	1.56E+03		1.62E+01		1.62E+01	1.56E+04		1.62E+02		1.62E+02
Phenol		108-95-2	6.13E+04				6.13E+04	6.13E+05				6.13E+05
Pyrene		129-00-0	2.21E+03				2.21E+03	2.21E+04				2.21E+04
Selenium		7782-49-2	5.11E+02				5.11E+02	5.11E+03				5.11E+03
Silver		7440-22-4	5.11E+02				5.11E+02	5.11E+03				5.11E+03
Strontium		7440-24-6	6.13E+04				6.13E+04	6.13E+05				6.13E+05
Stryene	(V)	100-42-5	1.23E+04				1.23E+04	1.23E+05				1.23E+05

Table 8. Preliminary Remediation Goals for Wildlife Refuge Worker

	Volatile Organics		PRGs at Risk = 1E-06 and HQ = 0.1					PRGs at Risk = 1E-05 and HQ =1				
			Adult WLRW		Adult WLRW		Adult WLRW	Adult WLRW		Adult WLRW		Adult WLRW
			Noncarcinogenic		Carcinogenic		Soil PRG	Noncarcinogenic		Carcinogenic		Soil PRG
		CAS	Soil PRG		Soil PRG		Risk = 1E-06	Soil PRG		Soil PRG		Risk = 1E-05
Target Analyte List		Number	HQ = 0.1		Risk = 1E-06		or HQ = 0.1	HQ = 1.0		Risk = 1E-05		or HQ = 1.0
Fluorene	(V)	86-73-7	4.08E+03				4.08E+03	4.08E+04				4.08E+04
Heptachlor		76-44-8	3.69E+01		6.12E-01		6.12E-01	3.69E+02		6.12E+00		6.12E+00
Heptachlor epoxide		1024-57-3	9.59E-01		3.03E-01		3.03E-01	9.59E+00		3.03E+00		3.03E+00
Hexachlorobenzene		118-74-1	5.90E+01		1.72E+00		1.72E+00	5.90E+02		1.72E+01		1.72E+01
Hexachlorobutadiene		87-68-3	1.47E+01		3.53E+01		1.47E+01	1.47E+02		3.53E+02		1.47E+02
Hexachlorocyclopentadiene		77-47-4	3.50E+02				3.50E+02	3.50E+03				3.50E+03
Hexachloroethane		67-72-1	7.37E+01		1.97E+02		7.37E+01	7.37E+02		1.97E+03		7.37E+02
Indeno(1,2,3-cd)pyrene		193-39-5			3.49E+00		3.49E+00			3.49E+01		3.49E+01
Iron		7439-89-6	3.07E+04				3.07E+04	3.07E+05				3.07E+05
Isophorone		78-59-1	1.47E+04		2.91E+03		2.91E+03	1.47E+05		2.91E+04		2.91E+04
Lead		7439-92-1										
Lithium		7439-93-2	2.04E+03				2.04E+03	2.04E+04				2.04E+04
Magnesium		7439-95-4										
Manganese (Nonfood)		7439-96-5	3.48E+02				3.48E+02	3.48E+03				3.48E+03
Mercury (elemental)		7439-97-6	2.52E+03				2.52E+03	2.52E+04				2.52E+04
Methoxychlor		72-43-5	5.11E+02				5.11E+02	5.11E+03				5.11E+03
Methylene chloride (dichloromethane)	(V)	75-09-2	4.63E+03		2.53E+02		2.53E+02	4.63E+04		2.53E+03		2.53E+03
2-Methylnaphthalene	(V)	91-57-6	2.04E+03				2.04E+03	2.04E+04				2.04E+04

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	Volatile Organics		PRGs at Risk = 1E-06 and HQ = 0.1				PRGs at Risk = 1E-05 and HQ = 1		
			Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW
			Noncarcinogenic	Carcinogenic	Soil PRG	Noncarcinogenic	Carcinogenic	Soil PRG
		CAS	Soil PRG	Soil PRG	Risk = 1E-06	Soil PRG	Soil PRG	Risk = 1E-05
Target Analyte List		Number	HQ = 0.1	Risk = 1E-06	or HQ = 0.1	HQ = 1.0	Risk = 1E-05	or HQ = 1.0
cis-1,3-Dichloropropene	(V)	10061-01-5	9.74E+02	6.57-01	6.57E-01	9.74E+03	6.57E+00	6.57E+00
trans-1,3-Dichloropropene	(V)	10061-02-6	9.74E+02	6.57E-01	6.57E-01	9.74E+03	6.57E+00	6.57E-00
Dieldrin		60-57-1	3.69E+00	1.72E-01	1.72E-01	3.69E+01	1.72E+00	1.72E+00
Diethylphthalate		84-66-2	5.90E+04		5.90E+04	5.90E+05		5.90E+05
2,4-Dimethylphenol	(V)	105-67-9	2.04E+03		2.04E+03	2.04E+04		2.04E+04
Dimethylphthalate		131-11-3	7.37E+05		7.37E+05	7.37E+06		7.37E+06
4,6-Dinitro-2-methylphenol (4,6-dinitro-o-cresol)	(V)	534-52-1	1.02E+02		1.02E+02	1.02E+03		1.02E+03
2,4-Dinitrophenol		51-28-5	2.04E+02		2.04E+02	2.04E+03		2.04E+03
2,4-Dinitrotoluene		121-14-2	2.04E+02	5.63E+00	5.63E+00	2.04E+03	5.63E+01	5.63E+01
2,6-Dinitrotoluene		606-20-2	1.02E+02	5.63E+00	5.63E+00	1.02E+03	5.63E+01	5.63E+01
Di-n-octylphthalate		117-84-0	1.47E+03		1.47E+03	1.47E+04		1.47E+04
Endosulfan I		959-98-8	4.42E+02		4.42E+02	4.42E+03		4.42E+03
Endosulfan II		33213-65-9	4.42E+02		4.42E+02	4.42E+03		4.42E+03
Endosulfan sulfate		1031-07-8	4.42E+02		4.42E+02	4.42E+03		4.42E+03
Endosulfan (technical)		115-29-7	4.42E+02		4.42E+02	4.42E+03		4.42E+03
Endrin (technical)		72-20-8	2.21E+01		2.21E+01	2.21E+02		2.21E+02
Ethylbenzene	(V)	100-41-4	5.62E+03	4.25E+02	4.25E+02	5.62E+04	4.25E+03	4.25E+03
Fluoranthene		206-44-0	2.72E+03		2.72E+03	2.72E+04		2.72E+04

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	Volatile Organics		PRGs at Risk = 1E-06 and HQ = 0.1			PRGs at Risk = 1E-05 and HQ =1		
			Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW
			Noncarcinogenic	Carcinogenic	Soil PRG	Noncarcinogenic	Carcinogenic	Soil PRG
		CAS	Soil PRG	Soil PRG	Risk = 1E-06	Soil PRG	Soil PRG	Risk = 1E-05
Target Analyte List		Number	HQ = 0.1	Risk = 1E-06	or HQ = 0.1	HQ = 1.0	Risk = 1E-05	or HQ = 1.0
Copper		7440-50-8	4.09E+03		4.09E+03	4.09E+04		4.09E+04
Cyanide		57-12-5	2.04E+03		2.04E+03	2.04E+04		2.04E+04
4,4-DDD		72-54-8		1.43E+01	1.43E+01		1.43E+02	1.43E+02
4,4-DDE		72-55-9		1.01E+01	1.01E+01		1.01E+02	1.01E+02
4,4-DDT		50-29-3	4.58E+01	1.01E+01	1.01E+01	4.58E+02	1.01E+02	1.01E+02
Dibenz(a,h)anthracene		53-70-3		3.49E-01	3.49E-01		3.49E+00	3.49E+00
Dibenzofuran		132-64-9	2.95E+02		2.95E+02	2.95E+03		2.95E+03
Dibromochloromethane		124-48-1	1.47E+03	3.29E+01	3.29E+01	1.47E+04	3.29E+02	3.29E+02
Di-n-butylphthalate		84-74-2	7.37E+03		7.37E+03	7.37E+04		7.37E+04
1,2-Dichlorobenzene (o-)	(V)	95-50-1	3.12E+03		3.12E+03	3.12E+04		3.12E+04
1,4-Dichlorobenzene (p-)	(V)	106-46-7	2.72E+03	8.40E+01	8.40E+01	2.72E+04	8.40E+02	8.40E+02
3,3-Dichlorobenzidine		91-94-1		6.13E+00	6.13E+00		6.13E+01	6.13E+01
1,1-Dichloroethane	(V)	75-34-3	2.25E+03		2.25E+03	2.25E+04		2.25E+04
1,2-Dichloroethane	(V)	107-06-2	4.74E+01	1.06E+01	1.06E+01	4.74E+02	1.06E+02	1.06E+02
1,1-Dichloroethene	(V)	75-35-4	9.20E+02	1.70E+00	1.70E+00	9.20E+03	1.70E+01	1.70E+01
1,2-Dichloroethene (total)	(V)	540-59-0	9.20E+02		9.20E+02	9.20E+03		9.20E+03
2,4-Dichlorophenol (at pH 6.8)		120-83-2	3.07E+02		3.07E+02	3.07E+03		3.07E+03
1,2-Dichloropropane	(V)	78-87-5	3.45E+01	5.63E+01	3.45E+01	3.45E+02	5.63E+02	3.45E+02

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	Volatile Organics		PRGs at Risk = 1E-06 and HQ = 0.1					PRGs at Risk = 1E-05 and HQ =1				
			Adult WLRW		Adult WLRW		Adult WLRW	Adult WLRW		Adult WLRW		Adult WLRW
			Noncarcinogenic		Carcinogenic		Soil PRG	Noncarcinogenic		Carcinogenic		Soil PRG
		CAS	Soil PRG		Soil PRG		Risk = 1E-06	Soil PRG		Soil PRG		Risk = 1E-05
Target Analyte List		Number	HQ = 0.1		Risk = 1E-06		or HQ = 0.1	HQ = 1.0		Risk = 1E-05		or HQ = 1.0
Cadmium (water)		7440-43-9	5.11E+01		1.74E+02		5.11E+01	5.11E+02		1.74E+03		5.11E+02
Cadmium (food)		7440-43-9	9.62E+01		1.74E+02		9.62E+01	9.62E+02		1.74E+03		9.62E+02
Carbon disulfide	(V)	75-15-0	1.51E+03				1.51E+03	1.51E+04				1.51E+04
Carbon tetrachloride	(V)	56-23-5	8.15E+00		8.21E+00		8.15E+00	8.15E+01		8.21E+01		8.15E+01
alpha-Chlordane		5103-71-9	4.39E+01		9.44E+00		9.44E+00	4.39E+02		9.44E+01		9.44E+01
beta-Chlordane		5103-74-2	4.39E+01		9.44E+00		9.44E+00	4.39E+02		9.44E+01		9.44E+01
gamma-Chlordane		12789-03-6	4.39E+01		9.44E+00		9.44E+00	4.39E+02		9.44E+01		9.44E+01
4-Chloroaniline		106-47-8	2.95E+02				2.95E+02	2.95E+03				2.95E+03
Chlorobenzene	(V)	108-90-7	6.09E+02				6.09E+02	6.09E+03				6.09E+03
Chloroethane (ethyl chloride)	(V)	75-00-3	8.88E+03		1.32E+03		1.32E+03	8.88E+04		1.32E+04		1.32E+04
Chloroform	(V)	67-66-3	1.92E+00		1.04E+01		1.92E+00	1.92E+01		1.04E+02		1.92E+01
Chloromethane (methyl chloride)	(V)	74-87-3	1.03E+02		3.71E+01		3.71E+01	1.03E+03		3.71E+02		3.71E+02
2-Chloronaphthalene	(V)	91-58-7	8.18E+03				8.18E+03	8.18E+04				8.18E+04
2-Chlorophenol	(V)	95-57-8	5.11E+02				5.11E+02	5.11E+03				5.11E+03
Chromium III		16065-83-1	1.53E+05				1.53E+05	1.53E+06				1.53E+06
Chromium VI		18540-29-9	2.27E+02		2.68E+01		2.68E+01	2.27E+03		2.68E+02		2.68E+02
Chrysene		218-01-9			3.49E+02		3.49E+02			3.49E+03		3.49E+03
Cobalt		7440-48-4	1.55E+02				1.55E+02	1.55E+03				1.55E+03

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	Volatile Organics		PRGs at Risk = 1E-06 and HQ = 0.1			PRGs at Risk = 1E-05 and HQ =1		
			Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW
			Noncarcinogenic	Carcinogenic	Soil PRG	Noncarcinogenic	Carcinogenic	Soil PRG
		CAS	Soil PRG	Soil PRG	Risk = 1E-06	Soil PRG	Soil PRG	Risk = 1E-05
Target Analyte List		Number	HQ = 0.1	Risk = 1E-06	or HQ = 0.1	HQ = 1.0	Risk = 1E-05	or HQ = 1.0
beta-BHC		319-85-7		1.84E+00	1.84E+00		1.84E+01	1.84E+01
delta-BHC		319-86-8						
gamma-BHC (Lindane)		58-89-9	2.66E+01	2.55E+00	2.55E+00	2.66E+02	2.55E+01	2.55E+01
Benzo(a)anthracene		56-55-3		3.49E+00	3.49E+00		3.49E+01	3.49E+01
Benzo(a)pyrene		50-32-8		3.49E-01	3.49E-01		3.49E+00	3.49E+00
Benzo(b)fluoranthene		205-99-2		3.49E+00	3.49E+00		3.49E+01	3.49E+01
Benzo(k)fluoranthene		207-08-9		3.49E+01	3.49E+01		3.49E+02	3.49E+02
Benzoic Acid (at pH 7)		65-85-0	4.09E+05		4.09E+05	4.09E+06		4.09E+06
Benzyl Alcohol		100-51-6	3.07E+04		3.07E+04	3.07E+05		3.07E+05
Beryllium		7440-41-7	9.21E+01	1.31E+02	9.21E+01	9.21E+02	1.31E+03	9.21E+02
bis(2-chloroethyl)ether	(V)	111-44-4		3.48E+00	3.48E+00		3.48E+01	3.48E+01
bis(2-chloroisopropyl)ether	(V)	39638-32-9	4.09E+03	5.47E+01	5.47E+01	4.09E+04	5.47E+02	5.47E+02
bis(2-ethylhexyl)phthalate		117-81-7	1.47E+03	1.97E+02	1.97E+02	1.47E+04	1.97E+03	1.97E+03
Bromodichloromethane	(V)	75-27-4	2.04E+03	6.17E+01	6.17E+01	2.04E+04	6.17E+02	6.17E+02
Bromoform	(V)	75-25-2	2.04E+03	3.73E+02	3.73E+02	2.04E+04	3.73E+03	3.73E+03
Bromomethane (methyl bromide)	(V)	74-83-9	1.93E+01		1.93E+01	1.93E+02		1.93E+02
2-Butanone (methyl ethyl ketone)	(V)	78-93-3	1.92E+04		1.92E+04	1.92E+05		1.92E+05
Butylbenzylphthalate		85-68-7	1.47E+04		1.47E+04	1.47E+05		1.47E+05

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	Volatile Organics		PRGs at Risk = 1E-06 and HQ = 0.1				PRGs at Risk = 1E-05 and HQ =1		
			Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW	Adult WLRW
			Noncarcinogenic	Carcinogenic	Soil PRG	Noncarcinogenic	Carcinogenic	Soil PRG
		CAS	Soil PRG	Soil PRG	Risk = 1E-06	Soil PRG	Soil PRG	Risk = 1E-05
Target Analyte List		Number	HQ = 0.1	Risk = 1E-06	or HQ = 0.1	HQ = 1.0	Risk = 1E-05	or HQ = 1.0
Chemical			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
Acenaphthene	(V)	83-32-9	4.08E+03		4.08E+03	4.08E+04		4.08E+04
Acetone	(V)	67-64-1	1.02E+04		1.02E+04	1.02E+05		1.02E+05
Aldrin		309-00-2	2.21E+00	1.62E-01	1.62E-01	2.21E+01	1.62E+00	1.62E+00
Aluminum		7429-90-5	2.28E+04		2.28E+04	2.28E+05		2.28E+05
Anthracene	(V)	120-12-7	2.04E+04		2.04E+04	2.04E+05		2.04E+05
Antimony		7440-36-0	4.09E+01		4.09E+01	4.09E+02		4.09E+02
Aroclor 1016		12674-11-2	4.64E+00	3.54E+01	4.64E+00	4.64E+01	3.54E+02	4.64E+01
Aroclor 1221		11104-28-2		1.24E+00	1.24E+00		1.24E+01	1.24E+01
Aroclor 1232		11141-16-5		1.24E+00	1.24E+00		1.24E+01	1.24E+01
Aroclor 1242		53469-21-9		1.24E+00	1.24E+00		1.24E+01	1.24E+01
Aroclor 1248		12672-29-6		1.24E+00	1.24E+00		1.24E+01	1.24E+01
Aroclor 1254		11097-69-1	1.33E+00	1.24E+00	1.24E+00	1.33E+01	1.24E+01	1.24E+01
Aroclor 1260		11096-82-5		1.24E+00	1.24E+00		1.24E+01	1.24E+01
Arsenic		7440-38-2	2.75E+01	2.22E+00	2.22E+00	2.75E+02	2.22E+01	2.22E+01
Barium		7440-39-3	2.64E+03		2.64E+03	2.64E+04		2.64E+04
Benzene	(V)	71-43-2	3.41E+01	2.05E+01	2.05E+01	3.41E+02	2.05E+02	2.05E+02
alpha-BHC		319-84-6		5.24E-01	5.24E-01		5.24E+00	5.24E+00

(2) Mean BCF calculated in ORNL. (1998) - Empirical Models for the Uptake of Inorganic Chemicals from Soil by Plants
(3) Derived from empirical data
(4) BCF was calculated using the log Kow equations from Southworth et al. (1978)
(5) Mean BCF calculated in Sample et al. (1998) - Development and Validation of Bioaccumulation Models for Earthworms
(6) BCF from USEPA (1999) Draft Combustor Risk Assessment Guidance was used.
(7) Mean BCF calculated in Sample et al. (1998) - Development and Validation of Bioaccumulation Models for Small Mammals
(8) BCF from Charters (1991)
(9) BCF from Paine et al. (1993)
* Soil to mammal and soil to bird BCFs taken from USEPA (1999) for Soil to Deer Mouse and Soil to Mourning Dove (Table D-3)
except where noted
NV = No value available

Table 7
Summary of Bioaccumulation Factors (BAFs) RFETS Ecological Risk Assessment

	1st Trophic Level Bioaccumulation Factors		2nd Trophic Level Bioaccumulation Factors	
	Soil to Plant	Soil to Invertebrate	Soil to Mammal *	Soil to Bird*
Acetone	25.3 (1)	0.045 (4)	2.17E-11	8.34E-11
Aroclor 1254	0.009 (1)	0.19(9)	0.09 (8)	0.09 (8)
Arsenic	0.555 (2)	0.266 (5)	0.006 (7)	0.006 (7)
Benz(a)anthracene	0.141 (1)	0.03 (6)	1.73E-05	6.63E-05
Benzo(a)pyrene	0.080 (1)	0.07 (6)	4.86E-05	1.87E-04
Benzo(b)fluoranthene	0.095 (1)	0.07 (6)	5.75E-05	2.22E-04
Benzo(k)fluoranthene	0.095 (1)	0.08 (6)	5.73E-05	2.20E-04
Beryllium	0.714 (3)	0.22 (6)	1.44E-06	NV
Carbon Tetrachloride	1.81 (1)	12.3 (4)	NV	NV
Chloroform	3.56 (1)	2.93 (4)	3.22E-09	1.23E-08
Hexachloroethane	0.345 (1)	NV	NV	NV
Lead	0.343 (2)	6.33 (5)	0.192 (7)	0.192 (7)
Methyl Ethyl Ketone	16.2 (1)	0.117 (4)	NV	NV
Methylene Chloride	5.35 (1)	1.23 (4)	NV	NV
Tetrachloroethene	2.17 (1)	8.43 (4)	NV	NV
Trichloroethene	2.39 (1)	6.85 (4)	NV	NV
Thallium	4.85 (3)	0.22 (6)	0.112 (7)	0.112 (7)
Toluene	1.88 (1)	11.4 (4)	NV	NV
Uranium	0.155 (3)	0.337 (3)	0.087 (3)	0.087
Vanadium	0.01 (3)	0.138 (3)	NV	NV
Vinyl Chloride	6.01 (1)	0.964 (4)	5.05E-10	1.95E-09

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Sample, B. E., J. Beauchamp, R. Efroymson, and G. W. II Suter 1998b. Development and Validation of Bioaccumulation Models for Small Mammals. ES/ER/TM-219. Oak Ridge National Laboratory, Oak Ridge, TN, USA.

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Travis, C.C., and A.D. Arms. 1988. "Bioconcentration of Organics in Beef, Milk, and Vegetation. "Environmental Science and Technology. 22:271-274.

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(1) BCF is estimated using the log Kow value and equations from USEPA SSL Guidance (2000) modified from Travis and Arms (1988)

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Table 6. Summary of Mammalian and Avian TRVs

		Mean Mammalian TRV (mg/kg day)		Mean Avian TRV (mg/kg day)	
	Endpoint	NOAEL	LOAEL	NOAEL	LOAEL
Acetone	All Sublethal Endpoints	3920 (5)	3470 (3)	No Reliable TRVs	
	Reproduction	4730 (4)	3450 (2)		
	Developmental	--	3500 (1)		
Aroclor 1254	All Sublethal Endpoints	5.55 (19)	20.7 (14)	34.3 (6)	56.1 (9)
	Mortality	--	47.9 (3)	--	5.89 (2)
	Reproduction	5.08 (4)	10 (2)	2.5 (1)	21.6 (4)
	Developmental	4.48 (5)	19.9 (8)	0.021 (1)	25.0 (2)
Arsenic	All Sublethal Endpoints	4.88 (7)	8.83 (8)	2.83 (2)	5.98 (3)
	Mortality	--	--	51 (1)	128 (1)
	Developmental	6.83 (5)	14.9 (4)	--	--
Benz(a)anthracene	All Sublethal Endpoints	No Reliable TRVs		No Reliable TRVs	
Benzo(a)pyrene	All Sublethal Endpoints	71.1 (3)	113 (4)	No Reliable TRVs	
	Reproduction	86.7 (2)	160 (1)		
	Developmental	40 (1)	96.7 (3)		
Benzo(b)fluoranthene	All Sublethal Endpoints	No Reliable TRVs		No Reliable TRVs	
Benzo(k)fluoranthene	All Sublethal Endpoints	No Reliable TRVs		No Reliable TRVs	
Beryllium	All Sublethal Endpoints	1.9 (4)	1.1 (1)	No Reliable TRVs	
Carbon Tetrachloride	All Sublethal Endpoints	26 (2)	756 (2)	No Reliable TRVs	
	Reproduction	26 (2)	--		
	Developmental	--	756 (2)		
Chloroform	All Sublethal Endpoints	178 (14)	239 (7)	No Reliable TRVs	
	Mortality	--	192 (5)		
	Reproduction	201 (10)	297 (4)		
	Developmental	120 (4)	161 (3)		
Hexachloroethane	All Sublethal Endpoints	240 (6)	543 (6)	No Reliable TRVs	
	Mortality	--	821 (3)		
	Reproduction	134 (2)	500 (2)		
	Developmental	134 (2)	500 (2)		
Lead	All Sublethal Endpoints	8 (1)	40.6 (2)	39 (3)	11.3 (1)
	Reproduction	8 (1)	40.6 (2)	2.49 (2)	11.3 (1)
Methyl Ethyl Ketone	Reproduction	1770 (1)	4570 (1)	No Reliable TRVs	
Methylene Chloride	All Sublethal Endpoints	118 (4)	139 (3)	No Reliable TRVs	
	Mortality	100 (1)	300 (2)		
Tetrachloroethene	All Sublethal Endpoints	14 (1)	770 (6)	No Reliable TRVs	
	Mortality	--	429 (2)		
	Reproduction	--	900 (1)		
	Developmental	--	900 (1)		
Trichloroethene	All Sublethal Endpoints	613 (10)	814 (11)	No Reliable TRVs	
	Mortality	450 (1)	2660 (8)		
	Reproduction	258 (3)	958 (3)		
	Developmental	390 (4)	719 (4)		
Thallium	All Sublethal Endpoints	--	0.74 (1)	No Reliable TRVs	
Toluene	All Sublethal Endpoints	--	417 (5)	No Reliable TRVs	
	Mortality	--	2500 (2)		
	Reproduction	--	260 (1)		
	Developmental	--	435 (3)		
Uranium	All Sublethal Endpoints	6.13 (1)	10.2 (2)	160 (1)	--
	Reproduction	6.13 (1)	15.3 (1)	--	--
Vanadium	All Sublethal Endpoints	29.5 (3)	24.6 (5)	11.4 (1)	114 (1)
	Reproduction	29.5 (3)	60 (2)		
	Developmental	--	2.1 (1)		
Vinyl Chloride	All Sublethal Endpoints	--	1.7 (1)	No Reliable TRVs	
	Mortality	0.014 (1)	2.48 (3)		
Radionuclides - PRGs for Internal and External Exposure (Higley and Kuperman 1995)					
Radium-228	Limiting Species (pCi/g)	3.50E+00			
Uranium-233/234	Limiting Species (pCi/g)	1.80E+03			
Uranium-235	Limiting Species (pCi/g)	1.90E+03			
Uranium-238	Limiting Species (pCi/g)	1.60E+03			
Plutonium-239/240	Limiting Species (pCi/g)	3.80E+03			
Americium-241	Limiting Species (pCi/g)	1.90E+03			

BOLD - Bold font indicates that the Mean LOAEL is less than the Mean NOAEL.
(#) - The number in parentheses indicates the number of database records used to calculate the mean TRV.
"--" - Indicates that no TRVs for the specific endpoint are available.

Table 5. Ecological Receptor Exposure Assumptions

Exposure Parameter	Variable	Units	Prairie Dog	Deer Mouse (Herbivore)	Deer Mouse (Insectivore)	PMJM	Mourning Dove	Kestrel
Body Weight	BW	kg	0.9	0.02	0.02	0.019	0.115	0.124
Food Ingestion Rate	FIR	Kg /kg BW-day	0.65	0.17	0.17	0.17	0.23	0.3
Soil Ingestion Rate	P_{soil}	% of FIR	7.7	2.9	2.9	2.9	16	5
Percent Diet	Percent	%	100 Plant	100 Plant	100 Invertebrate	100 Plant	100 Seed	50-Insects 50 Animal
Toxicity Reference Value	TRVs	mg/kg BW-day	Specific	Specific	Specific	Specific	Specific	Specific
Soil Bio Availability	AF	Unitless	1.0	1.0	1.0	1.0	1.0	1.0
Area Use Factor	AUF	Unitless	1.0	1.0	1.0	1.0	1.0	1.0
Bio Accumulation	BAF	Unitless	Specific	Specific	Specific	Specific	Specific	Specific

Sources: USEPA. 2000. Ecological Soil Screening Level Guidance. Office of Emergency and Remedial Response. USEPA. 1993. Wildlife Exposure Factors Handbook. Office of Emergency and Remedial Response. Higley, K. and R. Kuperman. 1995. Radiological Benchmarks for Wildlife at Rocky Flats Environmental Technology Site.

Target Risk HQ = 1.0, where HQ = Intake/TRV.

$$\text{Intake} = [(\text{Soil Concentration} * \text{Psoil} * \text{FIR} * \text{AFsoil}) + \sum_{i=1}^{n} (\text{BAF} * \text{Soil Concentration}) * P_i\text{food} * \text{FIR} * \text{AFfood})] / \text{AUF}.$$

$$\text{PRG} = \text{TRV} * \text{HQ} / \text{IRfood} * (\text{Psoil} + (\text{BAF1} * \text{BAF2})).$$

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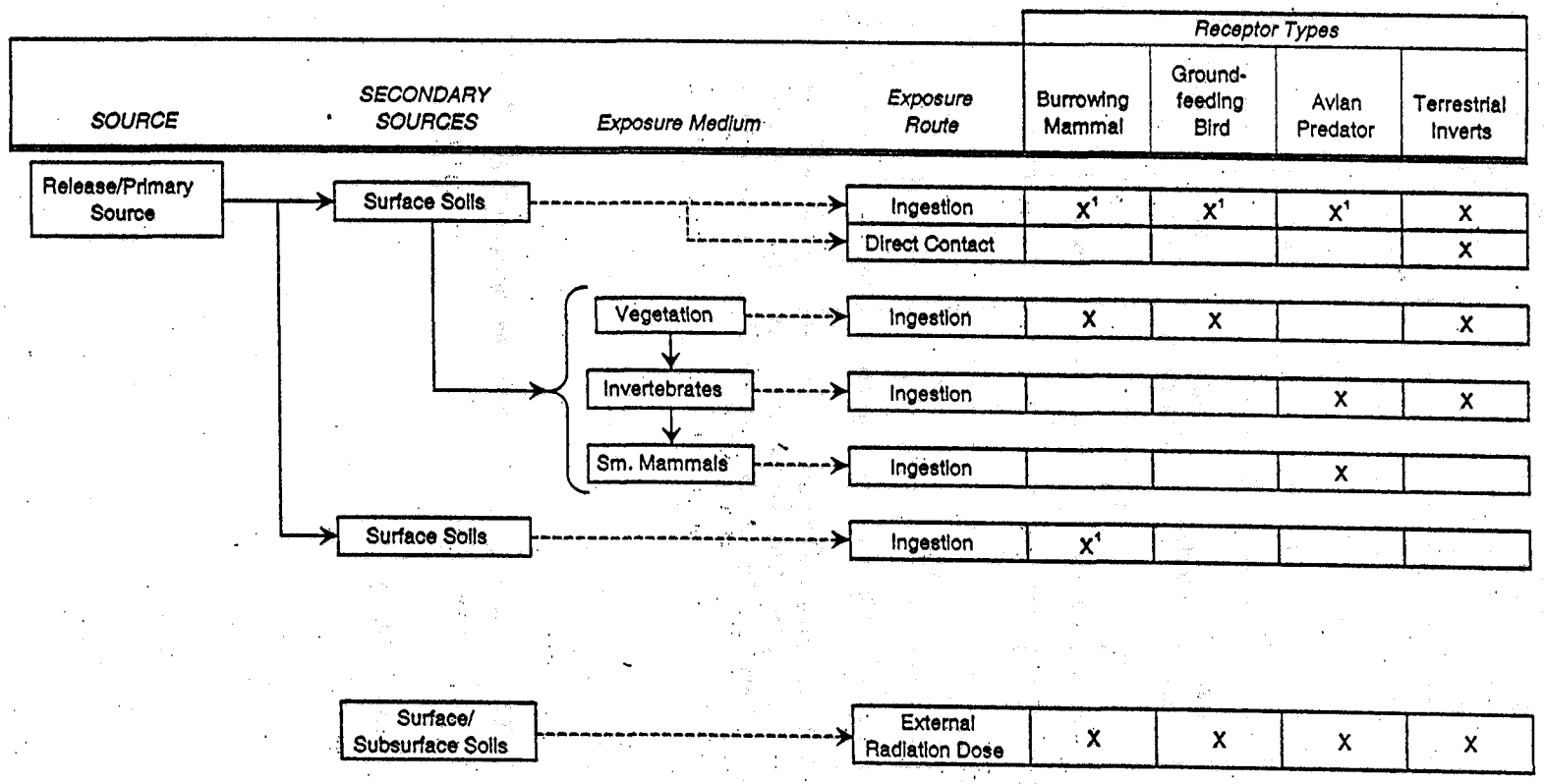
Table 4. Conceptual Exposure Model for Receptors Included in RFETS Ecological PRG Development Process



'X' indicates potentially significant exposure pathway
[1] Incidential ingestion of surface and subsurface soils